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# USSR Report

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24 January 1986

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## CIVIL AVIATION

### SCIENTISTS ON AIRCRAFT DEVELOPMENT TRENDS

Moscow GRAZHDANSKAYA AVIATSIYA in Russian No 9, Sep 85 pp 22-23

[Article by M. Golubeva and V. Zasimov, candidates of technical science and senior staff members of the Moscow Institute of Civil Aviation Engineers: "The Course of Technical Progress: Aircraft of the Future"]

[Text] The intensive consumption of non-renewable natural resources can be designated as one of the characteristic features of scientific and technical progress. An especial place is occupied among them by petroleum as the primary, or else the only, source of fuel.

It is predicted that the world consumption of fuel made from petroleum in civil aviation alone will increase roughly five percent each year over the next decade. Therefore, the prospects for civil aviation are completely tied on the one hand to the search for a substitute for the scarce fuel, and on the other to its all-round conservation.

Efforts are currently being undertaken to produce synthetic fuel from oil shale and bituminous coal, as well as hydrogen. Substantial difficulties, however, exist on the path to their practical application. For fuel made from oil shale, for example, it is necessary to determine its effect on the design, performance, maintenance and safe life of the combustion chamber and to evaluate the emission of pollutants. The production of this type of fuel, moreover, once again depends on the availability of natural resources. Hydrogen possesses the greatest calorific value per unit of mass. But it is not encountered in nature in the form of significant stockpiles; it must be manufactured, and to produce one unit of energy of liquid hydrogen requires approximately three units of energy from coal, hydrocarbon fuel or electricity. Therefore, the large-scale production of liquid hydrogen is possible only with an abundance of other forms of energy, which is unlikely in the foreseeable future. Moreover, design problems arise in creating an aircraft using hydrogen.

It is evident that the conservation of aviation fuel is therefore an important task at the present time. Aside from the preservation of raw minerals, this path leads to an increase in the economic efficiency of aircraft, since the cost of fuel has a substantive effect on the amount of direct operating expenditures. There exist two fundamental thrusts in fuel conservation: optimizing

aircraft operating conditions (elucidated in quite detailed fashion in the journal) and increasing its technical perfection. According to preliminary estimates, by the year 2000 an increase in the design and aerodynamic perfection of aircraft, as well as the perfection of engines, promises a decrease in fuel expenditure of 30-40 percent.

Design perfection can be raised by using substantially lighter materials, developing new aircraft configurations and introducing automated (using computers or microprocessors) systems of active flight control.

The search for ways to decrease aircraft mass led designers to the utilization of polymer composites consisting of polymer binding agents (matrices) and a fibrous filler. The most promising, already in use in aircraft construction, are high-modulus fibers of graphite and boron, as well as organic aramid fibers. Epoxy resins are used for the matrix in the first stage. Preference is now given to imidoplasts. Complex reinforcement with several types of fibers is also widely practiced. Composites possess a unique package of physical and mechanical characteristics that determine the economic efficiency of their utilization. Thus, they have high specific strength (in the direction of the fibers, five times more than titanium and aluminum alloys) and high specific rigidity. This permits a significant decrease in the design mass with the same mechanical features. The structure of the material can be strengthened by laying the majority of the fibers in the direction of the fundamental loads. Using fibers with low and high moduli of elasticity, the structural deformation can be controlled depending on the aerodynamic load and in that way its aeroelastic features can be optimized.

At first, the practice arose of simply replacing the metallic designs with designs from composites. But their advantages were not fully realized with this approach (an aircraft with substitute elements had only thirteen percent less mass). It is evident that composite design, with smaller dimensions and mass with a preservation of the aircraft's requisite flight characteristics, requires a decrease in the size and mass of the power plant. This approach allows a decrease in the design mass of 35 percent. With this, the savings of fuel is almost a third.

The most economical effect from the broad application of composites can be achieved with the new production technology of aircraft designs in a so-called modular integrated configuration. Here, design modules are produced in solid form, which eliminates a great quantity of fastener elements. Thus, in the manufacture of the leading- and trailing-edge flaps using this technology, the number of parts can be decreased by ten times. Research has shown that a modular configuration allows a decrease of 10-12 percent in the cost of aircraft manufacture, a decrease of 15-20 percent in its mass compared to prefabricated designs made of composites and of 25-30 percent compared to ordinary metallic designs.

According to the estimates of specialists, on the average the decrease in mass of a single supersonic aircraft, by using the new materials and microelectronics, can total 12,200 kilograms by 1995, which would correspond to an increase in its range of 830 kilometers.

The broad utilization of the new materials has provided a new stimulus for the development of aircraft that were earlier considered not very efficient. Thus, interest has arisen again in the United States in supersonic passenger aircraft. Development is being actively conducted on the design of a wing that changes its sweep depending on flight conditions, which allows the achievement of maximum cruising efficiency. A significant improvement is expected from this in aircraft flight performance of 15 percent in range and 30 percent in lift. The use of an active flight control system with a computer is presupposed to ensure the rapid automatic alteration of the wing sweep. At the same time, this system can fulfill such functions as an efficient increase in stability, the control of loads in maneuvering, parrying the influence of atmospheric turbulence and maintaining a high critical flutter speed.

Successes in the application of the new materials have allowed a return to the forward-swept wing. Its advantages have long been well known: great lift, less induced frontal resistance, better takeoff and landing performance, improved load distribution on the wing and of load masses and less trim drag. All of this leads to a conservation of fuel. However, a forward-swept wing has a substantial shortcoming: aerodynamic instability requiring the use of a more rigid, and thus heavier, wing. Until recently, all of the enumerated advantages were considered too insignificant to justify the increase in mass. But now the appropriate choice of fiber direction in the wing covering and the thickness of the covering layers can alter the location of the twist axis, which allows the satisfaction of the requirements of strength and aerodynamics. Thus, the weighting of the forward-swept wing will be minimal.

The aerodynamic perfection of aircraft can be increased by developing means to lower viscous drag and increase lift. Viscous drag is approximately half of the total aerodynamic drag on subsonic transport aircraft, and nearly half of the expended fuel, or approximately a third of the direct operating expenditures, are devoted to it. For all modern aircraft, as well as those that will soon be out on world air routes, a high level of aerodynamic drag is typical, caused by the forces of viscosity with the turbulent state of the boundary layer on the major portion of the external surface. If it were possible to maintain the full airflow laminarization of a modern aircraft, its viscous drag would be decreased by 90 percent, its expenditure of fuel by almost 45 percent and the direct operating expenditures by 27 percent.

From a theory formed in the 1930s and 1940s, it follows that the laminar flow can be maintained by way of creating favorable pressure gradients (natural laminar flow) or by partial boundary layer suction. The large dimensions and angles of the swept-back wing of modern long-haul aircraft hinder natural laminar flow. It is as fast as possible for the small aircraft of local routes. More promising is a method of active influence on the flow on the boundary layer by way of partial suction. This control of the laminar flow is possible on all the aircraft surfaces; until recently, however, research has been directed basically toward the wing. Specifically, a special contour of an improved wing, possessing very high aerodynamic properties, has been developed. Tests are now being conducted on several wing versions. In one version, boundary layer suction is achieved through slots located on almost the entire upper

surface and the major portion of the lower surface of the wing. In another version, suction is carried out only on the upper surface of the wing through holes. Incidentally, a version with a porous glass-reinforced plastic covering for boundary layer suction is proposed. The utilization of these systems will increase aircraft fuel efficiency by 25 percent, which is only approximately a fourth of the potential opportunities of the systems with full airflow laminarization of the aircraft.

Also being developed is a so-called combined laminarization system, the essence of which is that boundary layer suction is carried out only in the vicinities of the wing leading edge, and the rest of the contour is taken up on the principle of natural flow. This system is less efficient (fuel efficiency increasing 12 percent in all), however, wing design is greatly simplified with it. If it is taken into account that simplicity is usually accompanied by greater reliability, it can be expected that it is precisely the combined system that will find practical application.

Airflow laminarization of the fuselage presents an especially complicated problem due to the numerous violations of the smoothness of its surface (the cockpit windows, doors, hatches). But if the laminarization of the boundary layer becomes possible on only two thirds of the fuselage surface, aircraft fuel efficiency would increase by 69 percent.

A fundamentally different approach to solving the problem of boundary layer laminarization is based on lowering friction by decreasing the turbulence on the external part of the boundary layer. This method is extremely promising for the fuselage. Research is being conducted on various methods of reducing turbulence. In one of them, longitudinal ribs are used, formed on the flow surface by shallow grooves of various contours. The ribs lower the drag by nearly ten percent.

An effective method of increasing lift is blowing part of the upper wing surface or the lower wing surface of deflected flaps with engine exhaust jets (the so-called active method of lift increase). From calculations and experiments it follows that an aircraft with an active system has substantial advantages over ordinary aircraft of equal thrust-to-weight ratio and wing load. Thus, it can take off on a shorter track, carry more useful cargo (nearly 20 percent) and has a less powerful engine. These aircraft are extremely promising for local air routes with short airfield runways.

Engine perfection is determined to a great extent by the general progress of aircraft construction. Successes in the development of new materials, in particular, make it possible to develop high-load, small-dimension (with a diameter nearly half the size) multiblade (from six to sixteen blades) propellers with swept-back propeller blade tips. By the estimates of specialists, a turboprop installation will expend 15-30 percent less fuel than a turbojet engine with a great degree of bypass, and direct operating expenditures are decreased by 7-10 percent.

As regards the weight efficiency of modern engines, it must be noted that it is presently so high that qualitative advances can be achieved only in the

event of the broad application of composites. The combination of heat resistance, strength and rigidity make them promising for manufacturing high-load assemblies and parts of gas-turbine engines. The replacement of titanium in the manufacture of compressor blades, for example, allows the weight of a single engine to decrease 90 kilograms. And by manufacturing the compressor blade rim from composites, the weight of the engine will decrease by 360 kilograms.

Many problems arise on the path of increasing the technical efficiency of aircraft. One of these is protection from lightning discharges and static electricity on the surface. It is also necessary to protect the navigational and communications systems from electromagnetic interference generated by the processes of static electricity discharge. Composites, however, do not possess the resistance to the influence of discharge and electrical conduction as the metals they replace. For radioelectronic equipment, the dielectric covering of the aircraft will not be a more reliable screen. Moreover, the electrostatic charge accumulates more intensively on it, which leads to intensive interference on a broad frequency spectrum. The problem also has an independent economic significance: for many design elements, the factor limiting the minimal thickness of the wall is not its strength but its resistance to lightning discharges. This leads to a decrease in weight efficiency.

Summing up, it can be asserted that economics determines the path of aircraft development in the coming decades. Obeying its demands, aircraft designers have created many original and promising technical solutions whose introduction will substantially raise the operating performance of aircraft and, in the first place, their fuel efficiency.

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## MOTOR VEHICLES AND HIGHWAYS

### KAZAKH HIGHWAY MINISTER ON ROADBUILDING, HARVEST SUPPORT

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 14 Aug 85 p 2

[Article by Sh. Bekbulatov, KaSSR Minister of Highways: "Good Roads Are Needed for the New Harvest"]

[Text] The hard work of the agricultural harvest season is taking place on the vast spaces of Kazakhstan. The day is not far off when the mass harvesting of grain will begin in the northern part of the republic, in the principal grain regions.

One of the components of successfully conducting a harvest campaign, a matter which is truly of nationwide concern, is the further development and strengthening of the highway system. Good roads are necessary in order to deliver the harvest quickly and without losses to the granary. The highway workers of Kazakhstan are doing much to improve the quality of construction, repair, and maintenance of highways. To reduce manual labor they are making wide use of highly productive domestic and imported equipment. They are making wider use of technologies which conserve materials and resources and which have little waste.

As a result of these measures there has been a noticeable improvement in the condition of the highway network. Today 80 percent of common use roads are paved. The rate of extending transport links in rural areas is particularly high. In Alma-Ata, Dzhambul, Karaganda, and Chimkent Oblasts, in only 154 rural rayons have roads been laid through to all the central farmsteads of kol-khozes and sovkhozes, and in 61--to all populated points.

The main goal of highway workers is to provide precise and uninterrupted service to the national economy and the population with regard to hauls, to increase the economical nature and safety of motor-vehicular traffic with a calculated load and at high speeds, at any time of the year and under any conditions of climate and weather.

Highways have a direct relationship to agriculture; the latter's effectiveness is literally directly dependent upon the presence and technical condition of the highways. It was not by chance, therefore, that the preparation of the roads for agricultural hauls of the new harvest began long before the actual harvesting operation. During the hectic period of the harvest season truck-trailer trains and heavy-capacity trucks drive out to the rural settlements in massive numbers. Under these conditions ensuring the preservation and high de-



gree of reliability of the roads becomes a matter of the utmost importance. During the last two months alone 180 kilometers were hard-surfaced, capital repairs were carried out on 3,000 kilometers of roads, 800 running meters of bridges and 2,200 meters of pipes were reconstructed.

The operational effectiveness of road workers could be considerably higher if it were not for the acute shortage of asphalt. To be sure, there is the possibility of obtaining asphalt by means of oxidizing petroleum. However, the 45,000 tons of petroleum which were allotted by this republic's Gosplan during the current year were clearly insufficient; this amounted to merely 25 percent of the need. At the same time we are striving to use resource-conserving methods of repair, making extensive use of asphalt-mineral mixes and industrial by-products.

In order to increase the safety of highway traffic, 2,300 kilometers of coarse-surface treatment have been carried out. Taking into account the fact that great lengths of dirt roads still exist in the rural areas or have gravel surfaces, their regular dust removal and shaping have been organized. These operations have already been performed over a length of 41,000 kilometers. Of great importance for the effective work and convenience of drivers is information about the location of grain elevators and grain-receiving centers with the aid of indicator signs. Therefore, an additional number of them have been installed. The production of road signs with light-reflecting images has been organized at the departmental plant. Its capacity of more than 200,000 signs a year allows us to fully satisfy requisition orders of the user organizations.

Among the difficulties in organizing the transport process is unevenness in providing roads with hard surfaces in various regions of Kazakhstan. Particularly in the republic's western oblasts the proportion of well-constructed roads is lower than the average indicator for Kazakhstan by a factor of 1.5.

In order to eliminate the disproportions in these oblasts, provisions have been made to institute outstripping rates of highway construction. Fundable materials are sent directly there on a top-priority basis, additional industrial capacities are being created there, and patronage aid is being sent there from Alma Ata, Dzhambul, and Chirchik Oblasts. The road workers have taken stock of the more than 1,000 kilometers of approach roads leading to almost 400 grain elevators and grain-receiving centers. The approach roads to 132 of them are under departmental jurisdiction. Consequently, the plan for the road workers does not provide materials and resources for their repair. Understanding the importance of reducing grain losses during hauls, the road workers have carried out certain repair operations on the departmental approach roads, but, in the future, it would be feasible to put this work on a planned basis.

The ministry's collegium summed up the initial results of the bimonthly operations and has outlined specific measures with regard to completing everywhere the preparation of the roads for mass hauls of agricultural products from the new harvest. For omissions in the technical maintenance of the grain-hauling routes justifiable criticism has been leveled at the highway or-



ganizations of the Kustanay, Turgay, Ural, North Kazakhstan Oblasts. The collegium specified practical measures for correcting this situation.

Preparing the roads for gathering the harvest in this republic has gone beyond the framework of a narrowly sectorial problem and has assumed a nationwide importance. Targeted work in regard to carrying out the bimonthly preparations of the highways has been conducted by staffs in Alma Ata Oblast, the Narynkolskiy Rayon of the capital oblast, Katon-Karagayskiy Rayon of East Kazakhstan Oblast, Charskiy Rayon of Semipalatinsk Oblast, Leninskiy Rayon of Kustanay Oblast, and Volodarskiy Rayon of Kokchetav Oblast.

The bimonthly operations are conducted in the period between the sowing and the harvesting campaigns, which allows the equipment and motor-vehicle transport of the sovkhozes and kolkhozes, freed from agricultural operations, to be drawn into road construction and repair to the maximum possible extent. In this connection, the rights and possibilities with regard to the natural involvement of equipment and motor-vehicle in highway operations are not being utilized effectively enough. During the first half-year the plan for natural processing was fulfilled by 80 percent, which is convincing testimony that there are great additional reserves in the work of the highway organizations.

Working in close contact with the oblast staffs is the collegium of the ministry, which for each oblast has attached to it a responsible employee from the central apparatus. Furthermore, in order to exercise monitoring controls and render the necessary practical aid for individual regions, which are made up of 5--6 oblasts each, deputy ministers are personally attached.

Recently in Kustanay at a seminar-conference participated in by the following KaSSR ministries: agriculture, procurement, motor transport, and highways, as well as the KaSSR Agricultural Equipment Association, there was a detailed examination of the readiness of the roads for hauling the harvest for the republic's five northern oblasts.

This conference specified the deadlines and work volumes for completing the preparation of the grain-hauling roads by the time of the mass grain harvest. Noted again was the importance of ensuring a high quality in the construction and repair of highways, based on a strict observance of technological discipline, the use of up-to-date processes and progressive materials, highly productive equipment, and a widespread dissemination of the brigade contract method. Speeding up scientific and technical progress, it was emphasized here, is the only way to qualitatively restructure the highway system.

Today it can be stated that the main grain-hauling routes, with a total length of more than 60,000 kilometers, are basically prepared. But it is no less important for the road workers to maintain the highway network in an exemplary technical condition during the entire, hectic period of the harvest time. In order to solve this problem, almost 500 composite, mechanized brigades have been channeled into the current repair and maintenance of highways. They have been entrusted with the task of monitoring the technical condition of the highways, supervising the safety of highway traffic and observance of the rules for hauling grain and other agricultural products. Maintaining round-the-clock patrol posts on the main grain-hauling routes has been organized.

Highways comprise an important component link in the unified technological conveyor of agricultural production. Kazakhstan's road workers are adopting all the necessary measures to ensure that the harvest is delivered on schedule and without losses to the storage sites. "A green light for the new harvest"--these words have become the basic rule in our work.

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MOTOR VEHICLES AND HIGHWAYS

EFFORTS DIRECTED AT REDUCING MAZ VEHICLE WEIGHT

Minsk SOVETSKAYA BELORUSSIA in Russian 13 Aug 85 p 2

[Article by V. Bibikov: "The MAZ Trucks Are Becoming Lighter"]

[Text] If we compare the trucks which the Minsk Motor-Vehicle Plant produced in 1980 with those which it is manufacturing today, it turns out that the MAZ-5335 model "became thinner" by 428 kilograms, the MAZ-5549--by 746 kilograms, and the MAZ-509A--by almost a ton.

Other models have also become lighter. It is not, however, simply a matter of how much the hauling capacity of these trucks has increased without any decrease in their operational qualities. The metal conserved thereby, together with other factors leading to savings on materials, allowed this enterprise during the years of the 11th Five-Year Plan to increase its production volume by 15 percent without increasing its consumption of rolled ferrous metals.

What streams contribute to such a high-water river of conserved metal? They include improvement in design solutions, the use of curved cross-sections, and the replacement of large, heavy parts made of ordinary metal by lighter ones made of strong but economical alloys. Increasingly broader utilization is being made of blanks which have been "baked" from metallic powders--in the very near future more than 1,100 tons of them will be used per annum. Hundreds of tons of the "bread of industry" are freed up by the use of plastic parts.

"It is precisely this which constitutes the principal intent of the targeted, comprehensive program for economizing on metal which is in operation at our enterprise," states L. S. Chertov, the acting chief technologist at the Bel-avtoMAZ Production Association. "The plans for cutting down on the expenditure of this valuable material have been worked out for the five-year plan as a whole, as well as for the year, the quarter, and the month. Actively participating in drawing up and carrying out these assignments are special commissions which exist in every workshop and on every production line. The board of the chief technologist coordinates the work with regard to economizing on metal.

"We have been making gears for many years, but it was only recently, as if for the first time, that I caught sight of a bunch of blanks in the shop and

had the thought that they might be a bit shorter," states Hero of Socialist Labor Ye. A. Shulyak, a forger-stamper at the MAZ. "I addressed my suggestions on this score to the management. Their grounds proved to be well-based, and they were introduced. As a result, the expenditure of steel has been reduced by 12 tons a year. I am confident that similar reserves could be found by everyone."

Yevgeniy Aleksandrovich is not alone in having a lively spirit. There are 182 efficiency experts just in the forge shop where he works. And 350 of the innovations proposed by them have been utilized during the years of the 11th Five-Year Plan. The effect amounts to 311,000 rubles, 6,870 tons of metal conserved.

Recently the group at the Volga Motor-Vehicle Plant made a pledge to achieve during the 12th Five-Year Plan higher indicators with regard to speeding up scientific and technical progress, as well as a growth in productivity and its effectiveness in comparison with the planned control figures. This initiative was actively supported by the Minsk motor-vehicle makers. In particular, they have resolved to renovate and modernize all the equipment being turned out. Thereby the expenditure of metal will be reduced by 400 kilograms for each motor vehicle. The materials saved by this measure will be used to make 300 trucks along with 50 trailers and semi-trailers.

The enterprise is striving to consistently implement the directives set forth in the decree of the CPSU Central Committee with regard to the question of carrying out at the Minsk Motor-Vehicle Plant the Law of the USSR concerning Labor Groups. This has upgraded the creative activity of the motor-vehicle plant workers.

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## MOTOR VEHICLES AND HIGHWAYS

### MINISTRIES ARGUE OVER LIAZ-5256 BUS DEVELOPMENT

Moscow PRAVDA in Russian 27 Aug 85 p 2

[Article by M. Buzhkevich, PRAVDA special correspondent, Likino-Moscow: "A Bus Dispute: Problems and Opinions"]

[Text] The discussion dragged on for almost four hours. The inter-departmental commission was examining the progress being made in testing a new, large urban bus. As in all the previous sessions, the arguments were stormy.

At this point we must make a digression and talk about the pre-history of this problem. In the major industrial centers, where passenger hauls are particularly intense, a significant proportion of them now rests upon the shoulders of the LIAZ-677 buses. This motor vehicle has already been operating on the city streets for 15 years. With regard to its design, this bus has become obsolete, and its engine is a gasoline-powered one--uneconomical and polluting the environment. Therefore, at the end of the 1970's it was decided to create a new, large, urban bus. Roomy and comfortable, with reliable ventilation and heating. With a diesel engine. What they were talking about, as it was later stated, was a vehicle which would correspond to world standards. And they named it the LIAZ-5256.

Acting as the client was the RSFSR Ministry of Motor Transport, and as the contractor--the USSR Ministry of the Automotive Industry. Developing the new bus and its aggregate units was engaged in by the following: the Design and Experimental Work Administration of the Ministry of the Automotive Industry (A. Titkov, chief), the Soyuzavtobusprom [Buses and Vehicles with Specialized Bodies Industrial Association] (N. Salikhov, chief), and the All-Union Design and Experimental Institute--VKEIavtobusprom (A. Sled, director). Unfortunately, there was no creative cooperation between the client and the contractor. At times their relations were far from a business-like, mutual understanding between equal partners.

Let's return to the session of the inter-departmental commission, which was held at the end of July. Representatives from the Ministry of the Automotive Industry acquainted those assembled with the results of various tests run on the bus, with the changes which have been made in its design, and proposed to conduct testing of an experimental-industrial batch of these motor vehicles with a run of 20,000 kilometers.

This brought about some friendly objections from the motor-vehicle operators. Such an abbreviated check-up would not be beneficial--in accordance with the norms, experimental-industrial batches of motor vehicles should be run for 80--100,000 kilometers. In the given instance this is particularly important, for the bus has a number of shortcomings; it is not marked by a high degree of reliability in certain assemblies and units.

I had occasion to talk with responsible officials of the USSR Ministry of the Automotive Industry and the RSFSR Ministry of Motor Transport, to visit the Li-kinskiy Bus Plant, and become acquainted with the history of the creation of the LiAZ-5256 and its experimental model. In its exterior it is elegant, with flowing body lines which are pleasing to the eye, and with wide windows. The interior is roomy and quite nicely finished. This vehicle runs lightly and rapidly. However, the specialists have found quite a few defects in it.

The choice of an engine has determined a great deal. Special bus diesels with a horizontal configuration of the cylinders have been installed on the best foreign models. It was precisely such a type of unit that the client requested to be installed in this bus. But the officials in the Ministry of Motor Transport replied that they do not make such an engine nor do they intend to do so. And they decided to furnish the bus with a modernized engine--one which had been created for the KamAZ truck. The cylinders in it are configured in a V-shaped manner. Because of this, the engine place in the "tail" of the bus juts out over the floor of the interior. It is covered by a seat for the passengers. It is inconvenient to ride on such an "oven." Just look at what happens when the brakes are applied suddenly: you fly down onto the floor. Furthermore, this seat occupies the bus's rear storage area, and, because of this, its nominal seating capacity amounts to not 90 but rather 85--86 persons, which reduces the bus's hauling capacity. It should be added that its engine, as the workers of the Ministry of the Automotive Industry themselves admit, does not have a "long life," i.e., it is insufficiently reliable. Instead of the specified 300,000 kilometers, it hardly "lasts" for more than 200,000.

Taking this and a number of other defects of the new motor vehicle into account, the Scientific-Research Institute of Motor Transport considers that, with regard to a number of important technical-operating characteristics, it falls behind the best foreign buses.

The leading officials of the Ministry of the Automotive Industry are not in agreement with this conclusion. In one of the official documents, issued over the signature of the minister of the automotive industry, V. Polyakov, it is stated that "the design of the prospective LiAZ-5256 urban, diesel-powered bus has been developed to correspond to the present-day and prospective analogous models."

But who should be called upon to resolve this dispute? Evidently, the USSR State Committee for Science and Technology. And it did attempt to do just that. But its workers, unable to hold out against the self-assurance of the leading officials from the Ministry of the Automotive Industry, exhibited the greatest possible diplomacy. The protocol of the conference which discussed the question of the new diesel bus in July of this year under the direction of

A. Kamenev, the deputy chairman of the GNKT [State Committee for Science and Technology], noted that the LiAZ-5256 "basically corresponds to the world-wide trend in the field of urban buses." As it was explained to me in the committee, this entry must be taken as relating solely to the fact of placing the engine in the tail section of the interior.

In the Ministry of the Automotive Industry this diplomatic "formula" was evaluated as a confirmation of their own lofty ambitions, and their pressure on the motor-vehicle operators was increased. That is why, at the session of the inter-departmental commission, the demand of the motor-vehicle manufacturers loudly insisted that the testing of the new bus proceed full-speed ahead in order that its production might begin in 1986. But here is what, actually, turned out to be the case. The inventors of the new motor vehicle dragged out the initial phase of its development, and now they want to make up for lost time to the detriment of quality. The motor-vehicle manufacturers are not embarrassed that haste has already done them a disservice. Here is confirmation of that fact.

In January 1983 a group of drivers belonging to Motor Column No 1732 (from the city of Volzhskiy, Volgograd Oblast) wrote to the Lvov Bus Plant that the LAZ-4202 motor vehicle being turned out by them had a number of substantial design defects which were making its operation difficult. The representatives of the enterprise and the VKEIavtobusprom who came to the Volzhskiy Motor Column acknowledged the presence of substantial defects in this vehicle. A program to eliminate them was worked out.

Two and a half years have passed. And just what has been accomplished? Along with Ye. Novikov, a driver belonging to the Noginsk Motor Column No 1783, we examined his LAZ-4202, which had been produced at the end of last year. Some of the remarks made by the Volzhskiy motor-vehicle operators had been heeded, but there were still quite a few defects in the vehicle, just as there were before. The driver complained about the following ones: it takes half a day to remove and replace a brake housing. The replacement of a spring also takes a great deal of labor. The emergency and ventilation hatches in the interior fall out; working poorly, the fourth gear often gets jammed, and there are many other defects. Taking into account the low technical level of this motor vehicle and the carelessness in its manufacture, the RSFSR Ministry of Motor Transport refused to accept the LAZ-4202 for operations. The motor-vehicle manufacturers have been compelled to curtail its production. So that's how the matter turned out.

And there is nothing unexpected in this. As long as two years ago a provisional scientific and technical commission of the USSR GKNT approved a list of Soviet motor vehicles which meet modern-day requirements. It did not include the LAZ-4202, which along with a number of its "colleagues," the commission recommended taking out of production. But this motor vehicle went on line just recently--in 1981. And, as they admit in the ministry, it became a victim of haste in the planning and preparation of its production.

Something similar is likewise being repeated with the LiAZ-5256. In the Ministry of Motor Transport they are defending special departmental interests--at any price to "push" the new bus out onto the city streets as soon as possible.



Such a striving can, of course, be understood--the established deadline for the start of its production had passed--but it can hardly be justified. Could anyone really fail to think about what inconveniences the drivers of the new bus will experience, or about how much money will be swallowed up by its too-low level of reliability and lack of economy? But the main thing is that we must not forget about the passengers, who must be crowded into the interior and take their seats--even in the hot summertime!--on places which are "being heated."

In the bus dispute the position taken by the leading officials of the RSFSR Ministry of Motor Transport does, indeed, seem preferable. The motor-vehicle operators are concerned about both the economic and the social aspects of the matter; they are attempting to bring about a situation such that the new bus would actually permit the improvement of passenger hauls. Because, of course, the goal of speeding up scientific and technical progress, of creating the latest and most reliable motor vehicles, machine tools, and equipment consists of the fact that, with their help, we can ensure the further upswing in the country's economy, the growth of prosperity, and the upgrading of the quality of service to the population.

Here it is appropriate to note how uniquely certain of the LiAZ-5256 bus's creators have reacted to the criticism of its shortcomings which recently resounded in the press. They consider that such criticism undermines the prestige of the new motor vehicle and, naturally, that of the Ministry of the Automotive Industry. Abroad, they say, firms keep secret the progress of work on new buses and see to it that the press prints only positive, advertising-type reports. Permit me to disagree with such a point of view. It would hardly do to adopt such "experience." In contrast to the bourgeois press, the Soviet press is concerned, above all, with nationwide, state interests. And so that the prestige of the new bus does not "fall" from justifiable criticism, it is necessary to make it truly up-to-date, comfortable, and completely reliable. To put it more briefly, it should earn any praises it may receive.

...After heated arguments the inter-departmental commission adopted the decision to conduct tests of the experimental-industrial batch of LiAZ-5256 buses over a "distance" of 80--100,000 kilometers. And so its fate will be decided by objective indicators.

Nevertheless, the story of this vehicle's development demonstrates that the Ministry of the Automotive Industry is insufficiently attentive to the problems of motor-vehicle manufacture. There is no precise program here for its future development. In April, to be sure, the ministry's scientific and technical council discussed proposals concerning the structure of the motor-vehicle fleet up to the year 2000, but it rejected them because they were poorly prepared and not well thought out. But a precise calculation of what kinds of and how many motor vehicles the drivers must have constitutes the basis for a successful organization of hauls for the population, for upgrading the quality and standards of its transport service. The motor-vehicle manufacturers have failed to carry out the decisions regarding the production of buses in the northern, southern, and mountain services. And work on a vehicle having a seating capacity of 200--250 passengers--something very necessary for large cities--has not yet gotten beyond the "paper" stage.



And this is, obviously, to be explained by the fact that buses do not make much of a "stir" in this sector. For they comprise only a small percentage of the total number of motor vehicles being turned out. But, of course, they do haul more than 31 billion passengers per year in the cities of this country. And the quality of such a "trip" determines the degree of their transport fatigue, which has a direct influence on a person's labor productivity. Therefore, the creation of the LiAZ-5256, other motor vehicles, and developing the structure of the motor-vehicle fleet constitutes a task of great socioeconomic importance.

Let's hope that the bus dispute will end in favor of the passenger. And he remembers well the decree of the CPSU Central Committee and the USSR Council of Ministers, entitled "On Further Improving the Work of Transport with regard to Passenger Service." This decree, in particular, obliges the Ministry of the Automotive Industry to "immediately upgrade the quality, reliability, durability, and comfort of the buses being produced." And further decrees are being adopted to carry out these steps precisely.

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CSO: 1829/7

MOTOR VEHICLES AND HIGHWAYS

BRIEFS

TEDZHEN LNG FILLING STATION--Ashkhabad--Construction on the first LNG filling station in the republic has begun in the city of Tedzhen. It is designed to handle 500 motor vehicles a day. The advantage of LNG filling stations over conventional gasoline filling stations is that the car's tank is filled with methane, not a mixture of propane and butane, which make up only a small part of natural gas. This greatly reduces the cost of fuel. A general construction plan for LNG filling stations and their distribution throughout the republic has been drawn up for the 12th Five-Year Plan. They will be located in Ashkhabad and oblast capitals and along the main highways in Turkmenia. This will make it possible for a large percentage of motor vehicles to convert to cheaper, cleaner fuel within the next few years, saving tens of thousands of metric tons of gasoline annually. [By S. Kim] [Text] [Moscow SELSKAYA ZHIZN in Russian 10 Jul 85 p 1] 8844/13167

UAZ-3151 PRODUCTION BEGINS--Ulyanovsk--The Ulyanovsk Motor Vehicle Plant imeni V.I. Lenin has begun production of the new UAZ-3151 model, superseding the all-terrain UAZ-469 on the assembly line. Although outwardly similar to the previous UAZ design, the new model has a more economical and more powerful motor, telescopic shock absorbers, individual brakes and a number of other advanced design features. The new model will be available later in 90-100 horse-power diesel versions. Rural medical workers will soon receive a fine gift: an ambulance will be produced, fully outfitted with emergency medical equipment. All new models in the UAZ line are more economical and have higher-capacity motors. [Article by V. Sharygin] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 28 Jul 85 p 2] 8844/13167

BelAZ-75211 PRODUCTION BEGINS--Zhodino, Belorussian SSR--The Belorussian Motor Vehicle Plant has begun production of the 180-metric-ton BelAZ-7511. The first lot will be delivered to the Yakutugol Production Association. [By TASS and PRAVDA correspondents] [Excerpt] [Moscow PRAVDA in Russian 6 Aug 85 p 2]

LENINGRAD LNG CONVERSIONS PLANNED--By the end of the 80's, some 10,000 trucks, buses and taxis on the streets of Leningrad will be running on LNG. This is the picture called for in the project for the comprehensive use of LNG by motor vehicles drafted by the Leningrad Branch of the Scientific Research Institute for Motor Vehicle Transportation. In cooperation with the Institute, the Lenin Bus Plant is currently experimenting with a bus running on

low-pressure LNG, which can be filled up directly from the municipal gas line. The LAZ-4202 diesel bus is being developed to run on a mix of LNG (80 percent) and diesel (20 percent). Two LNG filling stations were recently opened in Leningrad with a capacity of 500 vehicles a day each. Nine more are planned in the 12th Five-Year Plan. Leningrad Training Combine No 3 has begun training LNG filling station attendants, technicians, maintenance mechanics and repairmen. [By B. Pipiya] [Text] [Leningrad LENINGRADSKAYA PRAVDA in Russian 11 Aug 85 p 1] 8844/13167

MOSAVTOZIL DIESEL ENGINE PLANT--A facility which is highly important to the nation's motor vehicle industry is being built in the Smolensk area near Yartsevo. It is the Mosavtozil Diesel Engine Association Plant. The plant is going up by the hour, not just by the day. Three huge production units are finished. The M. Arzhavkin and V. Rozhkov brigades are working on the fourth, competing with each other. Using the latest techniques and first-rate, highly efficient concrete placers, both brigades are ahead of schedule by a factor of 1.5 to 2. Stalkonstruktsiya Trust specialists were able to raise the steel frame seven months ahead of schedule. Units weighing from 15 to 50 metric tons are now being assembled. The heavy assembly line is operating at full capacity, handling up to 14 units simultaneously. [Text] [Moscow IZVESTIYA in Russian 22 Aug 85 p 1] 8844/13167

## RAIL SYSTEMS

### IDZHEVAN--RAZDAN LINE TUNNEL CONSTRUCTION PROGRESS

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 25 Apr 85 p 1

[Interview with Glavtonnelmetrostroy (Tunnels and Subways Construction Main Administration) chief Yu. Koshelev by an unnamed SOTSIALISTICHESKAYA INDUSTRIYA correspondent: "Underground Corridors"]

[Text] When the new Idzhevan-Razdan railroad construction project is put into operation, the Megradvorskiy Tunnel, which is being driven beneath the Pambakskiy Range, will be the longest transport tunnel in our country. The Armtunnelstroy [Armenian Tunnel Construction] tunnel drivers witnessed a noteworthy event on 22 April: the connection of the tunnel, which is 8.3 km long, and which opens a through road along its entire length. At our correspondent's request, Hero of Socialist Labor Yu. Koshelev, chief of Glavtonnelmetrostroy, which is part of the Ministry of Transport Construction, comments on this event.]

Let me say right away that the connection of the tunnel does not signify the end of the tunnel-driving work. In some places beneath the earth, the tunnel-driving was not done according to the projected cross-section for this subterranean line. Moreover, there still remain, as the specialists say, some "pillars"....In short, according to our estimates we still have to drive through several hundreds of meters which are shown as remaining, for our tunneling work to be completely finished. But at present there is a way through from portal to portal, and we can say with confidence that the tunnels on the Idzhevan--Razdan line will be completed in the time remaining before year's end.

We have now taken all measures to speed up the work. Two concrete plants, with a combined capacity of several hundred cubic meters of concrete per day have been installed along the right-of-way. Inside the tunnels we use moveable mechanized forms, which allow us to carry out concreting operations at high rates of speed. The mud is brought to the pouring sites by large-capacity concrete-mixing trucks. We only have five of them so far, but the tunnel-builders will soon obtain several more of these powerful trucks.

[Question] By the way, Yuriy Anatolyevich, the builders have been complaining about the acute shortage of metalwork.

[Answer] Yes, the shortage of metal is an acute problem, and not only at this construction site. It is now being corrected, and metal is coming in on a more regular basis. I believe we will soon be in a position to give the necessary help to Armtonnelstroy as well. In any case we cannot tolerate an interruption here. It is, in fact, a matter of the builders' honor to complete this construction project, which was envisaged during the 26th Party Congress, within the prescribed deadline.

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## RAIL SYSTEMS

### MOINTY--SARYSHAGAN LINE ELECTRIFIED

Moscow GUDOK in Russian 2 Jul 85 p 1

[Article by L. Turov, GUDOK correspondent: "The Pantograph is Raised"]

[Text] Sary-Shagan--Since the morning of 28 June an unusual expectation has reigned in Mointy. Heretofore, this station has seen the arrival of trains on electric traction strictly from the North, and now they have been expecting to see the same thing from the South, and this a half year before the prescribed deadline.

The work on the 125-km section and six separate stations was carried out by 10 Mintransstroy [Ministry of Transport Construction]. Over R18.5 million of construction and installation work has been done. Almost a third of this sum was handled by the workers on the Alma-Ata Railroad.

As chief railroad engineer N. Nikitin explains it: "Primarily we took it upon ourselves to erect the engineering buildings, the ETs [electric arrow and signal centralization] posts, communications buildings, power section compartments and the housing."

Right now in Sary-Shagan seven duplexes have been readied for habitation. Five more will be made available prior to the end of the year. The track work at the stations was done with a high degree of quality by collectives of the SMP-737 and SMP-371 road-building trusts.

Ya. Dik, the transport hub's party committee secretary recounts, "The suppliers had not delivered the communications equipment from Leningrad, and when it became obvious that the section would be turned over ahead of schedule, we asked them to speed up their deliveries, and they responded to this appeal."

Over 6,500 supports for the contact system have been installed on this leg. About 400 km of wires have been suspended. And the use of two power-supply wires (25 KV each) provides a steady supply of power, and the constancy of the voltage reduces the number of traction substations 2-fold.

During the construction and installation operations, SMP-209 and SMP-658 collectives, as well as municipal collectives under the respective leadership of V. Tamburovskiy, N. Nanilov, V. Kushnir and N. Demidov, did outstanding work.

Shock work on this vital construction project was done by excavator operator V. Popov and crane operator A. Kesov, diesel locomotive engineer A. Kolesnikov and bulldozer operator N. Kaygorodov, electrical installation brigade leaders I. Tokarev and V. Sorokin, contact system installers A. Bauman, N. Chebotarev, A. Naletov, M. Martayev and many others.

Feeling as though they had met their responsibilities, they and their comrades came to a triumphant meeting which was devoted to the arrival of the first train on electric traction from Sary-Shagan. Chief Alma-Ata engineer N. Nikitin, machine operator V. Bykov and secretary of the Dzhezkazgan Communist Party obkom V. Vurzin all addressed the meeting.

The red ribbon was cut, the orchestra played and the applause of those present thundered. Machine operator V. Bykov smoothly touched the consist which comes to Karaganda under coal power.

The first electified section of the Alma-Ata Railroad has been made operative. Now all efforts will be concentrated on the successive 140-km leg to Chiganak. The builders, along with the operational personnel, by making effective use of the experience they have accumulated, have decided to put this leg into operation by opening day of the 27th CPSU Congress.

Since the first of July, train traffic on electric traction has assumed a normal rhythm. The electrification of this leg has made it possible to transfer 20 diesel locomotives to other freight-traffic directions, and to increase the traffic flow by 1.5-fold compared to freight conveyed by diesel locomotives.

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CSO: 1829/278

## RAIL SYSTEMS

### COLLEGIUMS ACT TO IMPROVE TRANSPORT SUPPORT FOR AGRICULTURE

Moscow GUDOK in Russian 16 Aug 85 p 2

[Article: "Improving Transport Service to Rural Settlements"]

[Text] The collegiums of Goskomselkhoztekhnika [State Committee for the Supply of Production Equipment for Agriculture] and the MPS [Ministry of Railways] have examined ways by which rural rail service might be improved, and idle time for rail cars used in loading operations might be reduced. It was pointed out that the capacities of USSR Goskomselkhoztekhnika's material and technical supply network have markedly increased during the current five-year plan period. In the period from 1981 to 1984, 868,000 m<sup>2</sup> of warehousing area were put into operation. The hoist- and transport-machinery and mechanisms inventory was brought up to 30,900 units.

Major steps have been taken to upgrade the technical equipping of the railroad stations associated with processing agricultural freight shipments. During a period of four years, over half a billion rubles have been spent to these ends, over 1,200 facilities have been renovated and put into operation and 9,300 pieces of equipment have been delivered by rail.

A comprehensive system for effective railcar utilization has been introduced in more than 800 enterprises.

In Belorussia, effective forms of interaction are being used between railroad and Goskomselkhoztekhnika workers. Here, they are implementing effective control over their unloading operations by using reliable preliminary information concerning approaching freight shipments. Regulation of output consignments on local railways is being conducted effectively. This is being done with consideration taken for the offloading potentialities of the consignees.

At general-purpose stations, a daily average of 5,000 railcars loaded with agricultural freight are unloaded by workers of mechanized loading-unloading operations subdivisions. Special mobile brigades have been organized at the less active stations. Positive experience has been gained in this endeavor on the North Caucasus Railroad. Three mechanized columns and 56 travelling brigades have been set up here.



By processing freight at support stations, shipping costs for kolkhozes and sovkhozes undergo a yearly average reduction of R8 million, and up to 1,000 persons are relieved of carrying out loading operations. The level of mechanization in loading and off-loading operations has reached 95.9 percent.

Loading work is being concentrated on the excellently equipped approach lines and at the support stations. About 500 of the less active stations are to be enclosed during the five-year plan period for freight operations.

The dispatch transport service which has been set up at 169 stations to serve over 4,000 kolkhozes, sovkhozes and other agricultural enterprises has effected the liberation of a considerable number of people and transport equipment, and has reduced agricultural transport costs.

Meanwhile, there are a number of shortcomings in the haulage of agricultural loads from the stations, and in the utilization of the rolling stock. At a number of sites, the norms for railcar idle time are not being complied with. For example, in Kazakhstan the average idle time for railcars exceeds the norm by 8.2 percent, by 11.3 percent in Tadzhikistan, by 21.7 percent in the KiSSR and by 29.3 percent in the TuSSR. It is evident that not enough emphasis is being placed on strengthening the interaction and setting aright the businesslike collaboration among Goskomselkhoztekhnika organizations on the Northern, Kuybyshev, East Siberian, Far Eastern and a number of other railroads.

Some stations do not promptly unload the railcars and load their cargoes onto trucks. Prompt and reliable information about the approach of loads and railcar delivery is not organized everywhere. Goskomselkhoztekhnika's approach lines are slow in being kept in working order. It is true that the railcars sit idle for long periods of time because of malfunctions in the freight-hoisting machinery and mechanisms at the stations, and that the trucks sit idle as well, for want of being promptly loaded. The suppliers who dispatch the freight have been charged with inadequate requirements regarding the packing and containerization of agricultural freight shipments.

Of the 73 million t of freight shipped to general-purpose agricultural stations, 33 million t are shipped via Goskomselkhoztekhnika truck transport and the remaining 40 million t using the transport equipment of the kolkhozes, sovkhozes and other organizations. About 30,000 trucks are constantly taken away from agricultural work for this. The rest of the freight, which is not shipped away from the stations on time, comes to 300,000-500,000 t.

The collegiums of Goskomselkhoztekhnika and the Ministry of Railways have planned a number of additional measures to further improve agricultural transport service and to improve the effectiveness with which transport equipment, materials and workers are used. They have specified methods to improve production plan of freight deliveries, to strengthen business collaboration and to development of intersectorial socialist competition. Special emphasis has been placed on speeding up deliveries and preserving the freight.

## RAIL SYSTEMS

### CONTINUING PROBLEMS OF ALMA-ATA RAILROAD INVESTIGATED

Moscow GUDOK in Russian 4, 5, 6 Sep 85

[Serialized article by GUDOK special correspondents P. Khursik and G. Isakov, Dzhambul--Chu--Alma-Ata: "The Alma-Ata Railroad: Style and Methods of Leadership. 1. Metamorphoses; 2. Reprimand...with a Bonus; 3. In the Small Circle"]

[4 Sep 85 p 2] [Text] The Alma-Ata Railroad long ago became a touchstone for train lines. When unsuccessful lines are mentioned in the ministry, ones that do not meet their goals, as a rule they begin with Alma-Ata. And it is not because this is one of the first ones alphabetically. It is hard to find another mainline where the transportation process is so poorly organized. What is the matter here?

We are in the office of Alma-Ata Railroad chief K. Kobzhasarov. Kudaybergen Dyusenovich spreads out on his desk some sheets of Whatman drawing paper covered with black and red lines. The former show what used to be before he came, and the latter what exists now.

There have been some large changes. The length of the station lines has been increased by 200 kilometers, and the double-tracked lines by 180. At the Chu Station a modern technical inspection shop has been set up and in Dzhambul a hoisting shop... About 150 kilometers have been converted to electrical traction. All this has been done basically with the railroad's own forces. Even a part of the electrification work.

A few years ago, the new managers of the railroad called upon enterprise collectives to take a very active part in station reconstruction and other projects in order to eliminate bottlenecks quickly. With the help of party, soviet and labor-union organizations, they were able to mobilize and unite the people. In their free time, thousands of railroad employees went out to work -- switchmen, couplers, station duty-clerks, train engineers and workers in practically every service. In the severe heat and cold, in rain and snow, in icy winds and under the blazing sun they carried out their work at shock pace.

The sector headquarters helped the Alma-Ata people a great deal. Neglecting other mainlines, the ministry sent the best technology, additional equipment

and materials here, and increased the financial support. The railroad received hundreds of new diesel engines, half of them three-sectional, and a considerable quantity of equipment, rails... The total increase of capital investment amounted to 412 million rubles. We repeat -- increase!

The railroad chief mentioned the selfless labor of thousands and thousands of mainline workers and the allocation of enormous additional resources as if in passing. Only the contributions of the management stood in relief: I built, I figured, I gave the instructions... And it seemed as if it were not sheets of drawing paper lying on the desk but mirrors in which the railroad managers took turns looking at and admiring themselves. Of course, this was our subjective impression...

But the job has been done. Additional capacities have been introduced. And if they are utilized carefully, a considerable shipment increase can be achieved along with a reduction in production costs and the return of all expenditures to the state with interest.

At first things went very well; the railroad began to send off large shipments. The increase amounted to 22 percent. Freight turnover increased a little. And then it was as if someone stepped on the brakes, and the indicators once again took a turn downwards. What had the mainline and division management failed to take into consideration?

They had not considered the main things: they had left the organization, technology and management of the shipping process practically unchanged. And they no longer responded to new conditions and growing demands; they had paralyzed initiative. They did not take the trouble to improve the organization of competition or to introduce advanced experience in a purposeful way. It was impossible for all this not to show up in the work results.

Take one of the principal indicators: the turnover of local cars. For its slow-down the "negligent" client is usually blamed. Here everything is different. This is the latest data: of the total idle-time, 15 percent is due to the clients and 85 percent to the railroad. This time is for the distribution and shunting of cars. At Chu Station the difference is still greater: out of 47.6 hours of general expenditures, 43 go for distribution and shunting.

The idle-time increase for various units on the railroad has even been incorporated in the standards. For example, at Shemonaikha Station last year idle-time for one shipping operation amounted to 19.3 hours (this was higher than the norm). Now the norm has become 20 hours. And there are a multitude of such examples.

Traffic controllers try to justify losses during railcar distribution and shunting and the delay in getting transit traffic through by the "clogged state" of the train sections. There are definitely a lot of trains, but "clogging" is often created artificially.

Take the Chu--Mointy section for coupling with the Tselin Railroad. The

exchange here is, as they say, uneven. Alma-Ata delivers more trains than it receives from Tselin. As a result, there is a constant lack of Karaganda electric locomotives here. Their own trains are held up and so is the reception of trains from their neighbors. On some days they receive 9-10 fewer consists than are called for by the plan.

About a third of the trains turned in to the Tselin Railroad are empties. If even a half of them were made long-consist trains, the pairing would be ideal.

Not long ago, at the beginning of August, Chu Division chief V. Binus issued order No 391 obliging all empty-car trains to be dispatched in lengths of 400 axles. However, they were not prepared for this. They began to assemble trains on the by-pass line of Berlik-2 Station. There was no lighting, the shoulders for the railcar workers to pass were not measured off and there were no communications. And instead of accelerating the dispatch of car traffic, delays have begun to occur.

They were late in doing it, but they did install lighting and loud-speaker communications, and partly marked off the shoulders. But new obstacles appeared. The compressors of even the three-sectional diesel engines cannot pump up a mainline with a consist more than a kilometer in length. They begin to smoke and there is still not enough compressed air. With the norm for loading the mainline being 5-7 minutes, the diesel engines spend 3.5 to 4 hours pumping out certain trains. So trains are backed up in line.

We saw trains No 2010 and 2018 being coupled. Engineer Krykbayev could not raise the air pressure to the prescribed level after working the compressors constantly for 3 hours and 15 minutes, although the diesels used more than 100 kilograms of fuel during this time. Still, the train was sent off on its run against all rules.

Railcar workers and diesel engine workers blame each other for delays in the empty-car block trains. The former claim that even in new diesel engines the compressors are faulty. And the diesel engine operators think that there is a big air leakage in the trains. While the argument is going on, the car traffic volume slows down. And such cases of lack of communication between employees of various services on the whole railroad are ignored.

It is the traffic controllers who should coordinate the interaction between different subdivisions and manage shipments. However, as a verification carried out by local party organs showed, "...the chief of traffic service Yu. Dzheksenov is not capable of solving such problems, he has not assumed a role of leadership and does not use his authority among the railroad workers." The situation in the divisions is no better. MPS [Ministry of Railways] specialists who went out to the Alma-Ata Railroad observed, after a careful verification of the state of affairs: "There is practically no interaction between stations and divisions. The latter only record events. The role of the schedule is minimized; not one employee occupied with the organization of train traffic remembers it."

In the midst of this confusion, metamorphoses are taking place with the most

important indicators. What is supposed to be going down is going up, and vice versa. The idle-time of transit cars (we have already spoken of the local cars) has increased by 40 percent during the last two years, shipping production costs have grown by 11.3 percent, idle-time for locomotive repairs has increased by 31.2 percent and for railcars by 29.7 percent. The remaining number of defective railcars is now almost triple the norm.

What has decreased? First, the capital-output ratio, locomotive productivity and distance covered, labor productivity, the balance profit and incentive funds.

The Alma-Ata Railroad has put its neighbors in a difficult situation. Congestion regularly occurs at junctions. Not only freight trains but also passenger trains are held up. The neighbors are incurring large losses.

An especially bad situation has been created in the Dzhambul Division. It has become a barrier on the train line. We will say more in detail about this situation in the next report.

[5 Sep 85 p 2] [Text] The situation at the section became more complicated with the beginning of dispatcher G. Litvinov's period of duty. The engineer of train No 2149, O. Kulabekov, requested a propelling engine from Dzhambul.

"But your train is almost 1,100 tons under the norm," the dispatcher tried to object. "What kind of propelling engine could you be talking about?"

But the conductor repeated over and over: "I won't go without a propelling engine."

They had to hook on an auxiliary locomotive. It pushed 84 kilometers, as far as Chokpak Station. And still the train was late at every line. At the coupling point with the Chimkent Division in Tyulkubas it arrived 1 hour and 15 minutes late by the schedule. Dragging along behind it were numbers 2347, 2357 2417... It is easy to see that on the chart.

Soon the traffic at dispatcher S. Paniot's neighboring section began to plug up. Engineers O. Kalika and G. Nepomnyashchikh were already working overtime. Then five more brigades exceeded the normal time limits and still the obstruction grew.

We expected that in the Dzhambul Division they would immediately raise an alarm. The chief of the traffic department T. Akhmetov, the chief of locomotive management A. Tankeyev, and possibly even acting division chief V. Zhidkov himself would come to the dispatcher's rounds and undertake something to somehow get out of the situation that had developed.

But no alarm was heard. The dispatchers were peacefully drawing lines on the chart, and the senior dispatcher L. Shumeyko was walking around from place to place collecting information about the trains.

According to regulations, the engineer, after exhausting his time quota, does

not have the right to operate the train any farther without an order from the division chief. Not one request about orders was heard from the line. The brigades were working 10-12 and even 15 hours. And nobody was indignant. Why?

It turns out that such a situation is ordinary for the Dzhambul Division. It is sometimes worse.

"The whole problem," explains V. Zhidkov, "is in the unsatisfactory technical condition of the diesel engines. Out of 49 three-sectional locomotives, 12 have one section uncoupled and they have become two-sectional. Seven are hauling a third section as ballast. Ten are being repaired. The situation is even worse with the stock of two-sectional diesel engines."

During recent years, in certain depots, they have begun to give out diesel engines with detached traction engines in critical situations. But for them to detach a whole section is an "innovation." In fact such a 3TE10M diesel engine No 0071 fell to O. Kulabekov, and with a faulty cooling system to boot. That is why the engineer requested a propelling engine and why the train was late. But how could the Dzhambul diesel engine workers let their stock be in such condition?

The end was natural; it had been predetermined. Yet what happy prospects were contemplated 3-4 years ago! New locomotives kept arriving at the division, basically three-sectional ones. In the MPS they calculated that these machines, with a capacity of 9,000 horsepower, would begin to pull trains with a weight of 1,000 tons over the norm on the hardest Dzhambul--Tyulkubas section. And on the whole Mointy--Chenkeldy route they would be able to increase the weight of the trains. Besides that, the speed would pick up, the propelling engines would be taken off...

That is what they were planning to take from the new equipment.

But the complex, expensive equipment required careful maintenance, modern and high-quality repair. The locomotives did not receive any of this. The management led by K. Kaymoldayev, at that time division chief, sent the diesel engines out for the general rounds. For the most part they pulled light weight and empty-car block trains. They came back to the depot having run way over their allotted time and distance. The exploitation of the locomotives has been discussed persuasively in reports by the team of MPS specialists who were at the location.

...Because of lengthy periods of standing idle, each diesel engine on the section works with a load for up to 6 hours, and with empty turn-arounds 8-9 hours. Besides the over-expenditure of fuel, the exhaust system begins to coke and the turbocompressors begin to work unsteadily. In addition to this -- the untimely and poor quality repair... A long time in the depot violates the brigades' "double-manning" principle; almost every trip the engineers ride with new assistants.

Both in the railroad's locomotive service and in the chief directorate they knew that in Dzhambul the repair facilities for three-sectional locomotives had

not been established. They knew that the machinery was being exploited barbarically. But in both cases they only diligently recorded the bad situation, taking no measures to find a solution.

And at the division office they were just delighted at the beginning. New powerful diesel engines were working with no hitches. They closed their eyes to the fact that these engines were standing with working diesels for 8-9 hours at a time and that at other times the distance covered between servicings was more than double the norm.

In the depots, too, they were satisfied. There was little bother with the new locomotives. They would take apart an apparatus or unit, wash it in kerosine and put it back together. In all depots maintenance is divided into types -- TR-1, Tr-2, etc. In Dzhambul there was only type: "kerosine" maintenance.

It didn't worry anyone that the equipment was being asked to make an unrestrained loan of its resources. However you have to pay for such a loan with interest.

And the time came for Dzhambul to pay. The diesel engines required a greater and greater amount of repair. And there was nobody and nowhere to do this and nothing to do it with. And the sections went out of order one after another. What was to be done with them?

They found a solution. With the permission of the division management they set aside a small park of three lines. They began to send all the disabled sections there. So the three-sectional diesel engines turned into two-sectional ones. And machinery with two sections was disappearing altogether. Soon this park was christened the diesel engine cemetery. By the way, on the Alma-Ata Railroad every depot has its own such cemetery. The cemetery in Chu, where 23 diesel engine sections are resting in peace, has already been described in GUDOK. In all, about 150 sections have been "buried" on the railroad.

In Dzhambul, the unscrupulous repairmen, often with the aid of a crowbar, sledgehammer or even an autogenous welder, would take needed parts and units from the disabled machines. What they couldn't remove, they tore off and threw on the track spacing. Among the rusty pieces of metal even now one can find the remains of control panels, manifolds, wheel-motor units and the bodies of diesel engines. Frequently, as soon as a section wound up at the cemetery it was turned into scrap metal.

The "dismantling" of diesel engines went on and still does with the use of powerful equipment. On the orders of the division chief the cranes of a reconstruction train were sent several times to the cemetery. They pulled the diesel engines out whole. On the ground they picked them apart down to the last screw. Two such carcasses with generators are still lying on the railway shoulder. Not far away are wheel-motor units, manifolds...

The condition of the diesel engines still in operation has deteriorated catastrophically. More and more often the depot management has required that



brigades be sent out on the rails in defective machinery, even in cases when there was a direct threat to traffic security. If the brigade did not accept the defective diesel engine, it was immediately punished. Engineer V. Narikyan refused to ride on a 3TE10M emergency locomotive No 0116. The depot chief transferred him to a position with less pay. Another brigade set out on a run in a diesel engine, knowing nothing about its defects. They left, and along the way one of the sections burst into flame.

One could have expected that the manager who sent the train out with a defective diesel engine would be called to account, that they would track down the damage he had inflicted on the state and that the engineer who was unjustly removed would be restored. Nobody said anything, and the worker was not restored.

Neither the division management nor the rayon committee of the railroad workers' trade union showed any concern about establishing normal work conditions for the diesel engine workers. Some trips last 30 hours and more. Sometimes rest at home amounts to 6-8 hours, if loss of time on the road is taken into consideration. Imagine spending 30 hours in the cabin of a diesel engine, where the temperature in the summer reaches 54-56 degrees, and then setting out again on a run almost without any rest.

It came to the point where, on the initiative of the division management, they applied the so-called "rotating duty" method of brigade work here. This is what they used to call "tour" work during the war. But that was the war! Why have we come to a point in peacetime where for months on end people cannot be at home?

In the division they have lost count of overtime hours. For one year in the Dzhambul depot alone the number approaches 500,000. Engineers Kh. Mindubayev, A. Belyayev and a number of others have put in almost 600 hours of overtime work each during the last half year. The trade union committee only protests the overtime work as a matter of form. With such organization (if one can call it that) of operational work, there have come reports from division chief K. Kaymoldayev about work successes. There was even a case where a such a report was taken at face value and the division was awarded the challenge Red Banner. The People's Control Committee discovered later that in this quarter "...violations of accounting authenticity (additions and deceptions)" were admitted. K. Kaymoldayev was sternly reprimanded. And from the railroad administration an order came... to award him a cash bonus.

We will tell about how the division chief was relieved of his responsibilities for work failures and abuses of his official position in our next report.

[6 Sep 85 p 2] [Text] The workers and managers of the Dzhambul subdivision of civil installations and water supply cannot remember having worked at the pace they used to repair "project No 28" on Trudovaya Street. The walls grew before your eyes. The overhead coverings and sanitary engineering equipment were being installed. It seems only yesterday that the bricklaying showed its rough seams. And today we can see a smooth plastered surface and splendor of colors.



Alongside this, auxiliary buildings were being put up in the yard and the site was being equipped with services and utilities. On the neighboring streets, an excavator gnawed into the rock-hard earth, leaving behind a trench for communications. And into it the installers laid pipes for heat and water lines...

Motor vehicles were rushing between the project and warehouses, hauling structures, equipment and materials. And what was most valuable was delivered in double supply. In case something was damaged, there was a replacement on hand.

They worked at "project No 28" at a shock pace. The order was "faster, faster still, as fast as you can!" Cost was no object. And the project was finished in a very short time, without a single thing left undone.

When the doors of the iron gate closed and the whole project was hidden from the eyes of passers-by, it seemed the right moment to mention those who had excelled. But there were no fine-sounding orders. On the contrary, this construction epic called forth indignation among the railroad workers of the Dzhambul junction.

Angry letters were sent to the Alma-Ata Railroad administration. In them it said that A. Kaymoldayev, chief of the Dzhambul Division, in spite of the serious lack of housing and the decrepit condition of many buildings, had put all the railroad subdivision's available forces into remodeling his own house. The workers had dubbed this house "project No 28" from the last two figures of the building's street address.

It was pointed out that the remodeling had been done with great excesses. The living area was expanded to 98.1 square meters. Heating pipes stretched for almost a kilometer. Summer buildings were erected... As a result, with the balance worth of the whole house at 1,800 rubles, the remodeling cost 26,000. Many scarce materials, ordered at double the amount needed, had disappeared without a trace.

There were certain inaccuracies in the letters, to be sure. No, the division chief did not put all the subdivision's available forces into his own house. Someone was still taking care of the planning work. All the rest was true.

Other extremely improper details were clarified. Before being appointed division chief, A. Kaymoldayev obtained a nice apartment on Voroshilova Street. And the ink was not yet dry on the order appointing him railroad division chief, when his small family moved to a roomier apartment with an improved design on Vokzalnaya Street. Later, even that turned out to be cramped. They wanted to live in a private house, surrounded by greenery...

The letters arrived and someone had to react. Someone did. A small circle examined this and felt the matter should be limited to discussion. The letter writers thus learned nothing. And it wasn't surprising. What could be said? If one were to write that everything had been corroborated, then it would have

been necessary to call Kaymoldayev to account for his improper affairs. And they were not about to "undermine his authority."

More than that, they decided to lend material support to this man who had over-extended himself. Why, every new move requires expenditures. And here there were three of them. One right after the other! How could someone not help a family in difficult circumstances? And the orders went out to award A. Kaymoldayev certain bonuses. For introducing PONAB mechanisms -- 120 rubles. For organizing competitions -- 200 rubles. For shown initiative -- another 200. For successfully fulfilling quotas -- a half month's salary. What didn't they give the Dzhambul railroad division chief bonuses for! The orders regarding bonuses sometimes were issued with intervals of 7 or even 5 days. No, they were not made public. It was all done in private. If not, division employees would wonder for what services their chief was being awarded bonuses. Because the work in the division was going very badly.

The personal salary and numerous bonuses were not enough for A. Kaymoldayev, apparently. And he decided to adjust his budget himself. He set the rent on his house at a considerably lower level than was authorized. When the abuses were discovered, without the least embarrassment he made additional payments... for the last three months.

This time the railroad division chief's "escapades" were again considered by a small circle. They decided not to wash their dirty linen in public. But soon a new scandal broke out. It began in the school that belonged to the railroad, where Kayrat, the division chief's son, attended. He was a poor student. In his graduation certificate he had C's in all the leading subjects. His average grade was only a B-minus.

With such grades, and more importantly with such knowledge, it was hard to get into an institute. But Kayrat's mother, Z. Kaymoldayeva, decided that the matter was reparable. Literally the day after graduation certificates were given out, she appeared at the principal's office of middle school No 26.

"You see," Zinaida Serikbayevna began as she came in the door, "my boy lost his certificate. Please issue a duplicate..."

According to present regulations, in order for a duplicate to be issued a notice must be published in the press that a certificate has been lost and a paper must be obtained from the appropriate organs saying that it has not been found. The school principal, N. Sporysheva, knew all these rules, of course. But she also knew who she was dealing with. The school, after all, did belong to the railroad.

So in violation of all the rules, a duplicate (No B-041127) was issued. But what striking changes had taken place in the document's contents! Now there were seven A's -- in all the leading subjects, and the rest B's. Not a single C. They published the announcement in the paper... after the document was issued.

With this duplicate, Kayrat Kaymoldayev appeared at Karaganda University. But

his knowledge was still the same. He failed the entrance examination in all subjects. Well, what of it! If he didn't succeed in getting into the day division, there was the evening division. And, just imagine, he was accepted. In the law faculty. How a young man with no job succeeded in doing this has not been established. But the fact that the high grades in the duplicate certificate played a role in this is definite. And after a certain time Kayrat was transferred to the day division.

Joyful events took place during this time for the family of N. Sporysheva, principal of school No 26, where Kayrat had attended. At first the family received a nice two-room apartment, and 11 months later an improved-design three-room apartment in a new building. The order was written out in the name of Sporysheva's husband, who was foreman of the depot. The second apartment was granted at the personal request of the division chief.

As is now confirmed, any connection between the issuance of a duplicate certificate with improved grades to the son of the division chief and the orders for an apartment with improved design for the school principal's family has not been established. The people were simply lucky, they say. We are simply noting the fact, and would only add that in Dzhambul there are also unlucky families. In the depot, where foreman Sporyshev works, there are about 400 such families. Some of them have been waiting for housing for more than 10 years...

But no matter how you twist the cord, the end is always visible. At the beginning of the current year an announcement came out that Kayrat's duplicate certificate was false. They found out about this in the Kaymoldayev family. And immediately an application went to the rector: due to the illness of his grandmother, father and mother, Kaymoldayev is obliged to interrupt his studies and requests that the duplicate graduation certificate be returned to him.

Usually this document is returned only in the case of dismissal. For student K. Kaymoldayev they made an exception and returned it. But in a week's time he requested that the principal of middle school No 26, N. Sporysheva, issue yet another duplicate. The first, he said, had been lost...

In Dzhambul the scandal had already come to a head. And the request was denied. Then the father himself, the Dzhambul Division chief, took the matter in hand. He set off for the republic capital and went to see the chief of the department of railroad educational institutions, M. Uvaysov. And the latter wrote out the instructions: "To the principal of middle school No 26: Issue K. Kaymoldayev a duplicate certificate."

They obeyed and issued a duplicate (No B-157660). Only this time the real grades were filled in, not the imaginary ones. With this duplicate Kayrat hurried to the university. There he joyfully informed them that he was ready to resume his studies.

He did not take into consideration that in Karaganda there were left two copies of the first duplicate certificate. And when they took a look at the new document, the forgery was discovered. And another university order came

through: second-year student K. Kaymoldayev, matriculated with forged documents, to be expelled from the university.

Parallel events were developing in Dzhambul. The public prosecutor's office was occupied with the matter of the issuance of the false duplicate No B-041127. Only the wheels of investigation machinery turn slowly. And when school principal Sporysheva was presented with a notice, she had already prepared her defense.

"Show me the false duplicate that I supposedly signed, and then accuse me..."

It was quite clear that they would not find it. Investigations were able to establish only that in this lost document the grades had been raised.

And how did the administration of the Alma-Ata Railroad react to all this? They did not see, or more accurately did not want to notice, that the division chief not only was incapable of managing a large, complex operation, but had also lost the moral right to lead a collective.

The Dzhambul obkom [oblast party committee] of the KaSSR Communist Party was compelled to raise the question of relieving the compromised railroad division chief of his duties. By order of the Ministry of Railways, K. Kaymoldayev was relieved of his duties for abuse of his official position for personal gain.

But even after this they stuck up for the former railroad division chief. The railroad chief gave the order that A. Kaymoldayev be transferred to the republic capital and be appointed deputy chief of railroad passenger services. On the whole, the captain who had compromised himself was shifted from one easy-chair to another... That is how personnel problems are sometimes solved on the railroad. And yet the success of any matter depends first of all on such personnel.

At the April (1985) Plenum of the CPSU Central Committee, it was emphasized that no employee may remain outside of control and that it is absolutely necessary to rid ourselves of irresponsibility and laxity. We must observe Lenin's principle of personnel selection, placement and education most strictly. The Alma-Ata Railroad has not yet been penetrated by these party demands. And it is time to reorganize -- quickly and decisively.

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## RAIL SYSTEMS

### DESIGN APPROVAL FOR ALMA-ATA METRO 1ST PHASE CONSTRUCTION

Moscow TRANSPORTNOYE STROITELSTVO in Russian No 6, Jun 85 p 62

[Unsigned "Chronicle" column: "In the Scientific and Technical Council of the USSR Ministry of Transport Construction"]

[Text] The Tunnel and Metro Section has considered and approved the Metrogiprotrans design for construction of the first, start-up phase of the metro system in Alma-Ata. This includes the basic design solutions for the full development of the first line, which is to have 11 stations along a length of 13.23 kilometers [text reads "13.23 meters"].

The plan of the Alma-Ata Metro, intended to serve the most important passenger traffic locations both in the city center and also on the periphery, consists of three lines:

1. From 50-letiyе Oktyabryа Prospekt to the western residential area;
2. From the Central Park of Culture imeni Gorkiy to the center of the Orbita Mikrorayon;
3. From 50-letiyе Oktyabryа Prospekt to Abay Prospekt and beyond, with exits onto Furmanov Street and Lenin Prospekt. The total length of the lines should reach 40 kilometers.

The construction length of the initial, start-up phase of the first line (not including the spur to the depot) will be 8.3 kilometers; the operating length, with eight stations, will be 7.66 kilometers. The depot will be located near the Oktyabrskaya Station, in the area of the Alma-Ata II Railroad Station. The central part of the line with six stations (Dostyk, Almaly, Zhetysu, Kommunisticheskaya, Baykanur, Tulmar) will require a deep route. The end stations (Oktyabrskaya and Alatau) are planned to be shallow. All the stations will have island platforms long enough to accommodate five-car consists.

The geological engineering conditions for the construction of the first line of the metro are complex, but there is no [ground]water present.

The tunnel facings in the deep part will be prefabricated, precast, reinforced concrete blocks. For earthquake protection, the facing blocks are designed to

be connected with ties stretched in circular patterns, in the manner of small, stacked corners. Cast-iron tubular tunnel facing is envisaged only at openings for tunnel-related structures.

Of the six stations, two will be columned and four will be of the pylon type.

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## RAIL SYSTEMS

### BRIEFS

MEGRADZORSKIY RR TUNNEL PROGRESS--TASS--On the eve of May-Day builders of the Idzhevan--Razdan Mainline achieved a major labor victory. Today penetration of the multikilometer Megradzorskiy tunnel was completed. This is the longest underground corridor on the route. [Text] [Moscow GUDOK in Russian 28 Apr 85 p 1] 6904

OCTOBER RR TRACK IMPROVEMENTS--Leningrad, 10 May--Transport construction workers and railroaders of the October Mainline placed two modernized open lines on the Leningrad--Moscow and Leningrad--Pskov lines in operation ahead of schedule. Passenger and freight trains began running on them. A renovated electrified section between the stations of Sablino and Popovka was first to become operational. In implementing the Intensifikatsiya-90 comprehensive territorial program, the brigades of construction workers and railroaders performed a large set of projects two months ahead of schedule: they poured many thousands of cubic meters of earthen bed, installed hundreds of reinforced concrete piers, hung several tens of thousands of meters of overhead wire and assembled signalling and communications systems. Placement of the renovated open lines in operation will allow sending more long-distance passenger and suburban trains on these routes and will improve the regularity of movement of heavily-loaded trains. Transport construction workers and railroaders of the city on the Neva also plan to modernize succeeding sections of track located both on these two lines and on the Roshchino--Vyborg route ahead of schedule. [By OKTYABRSKAYA MAGISTRAL large-circulation newspaper contributor V. Petrov] [Text] [Moscow PRAVDA in Russian 11 May 85 p 2] 6904

GORKIY METRO CONSTRUCTION UPDATE--Gorkiy--Competing in honor of the 27th Party Congress, collectives of Gormetrostroy [Gorkiy Metro Construction Administration], of subcontracting organizations, and the management of the subway being built decided to place the first phase of the Gorkiy Subway in operation almost three months ahead of schedule. The final holing of the open line between the Moskovskaya and Chkalovskaya stations now is being completed and finishing work is being carried out at accelerated rates at the Proletarskaya, Dvigatel Revolyutsii and Zarechnaya stations. The management of the subway being built is taking steps to supply the underground line with specialists: transport workers, locomotive brigades, railway engineers, communicators and power specialists. Immediately after the first phase is placed in operation construction will begin on the second, up to the motor vehicle plant palace of culture, where a large residential development is situated. The

Gorkovmetroproyekt Institute already is planning subway lines from the rail-road depot to the vicinity of Krasnoye Sormovo and the new microrayon on the bank of the Volga. [By A. Yudanov] [Text] [Moscow GUDOK in Russian 25 May 85 p 1] 6904

NEW SVERDLOVSK RR JUNCTIONS--New sidings on the Sverdlovsk system have been given the following names: Silinskiy (Surgut--Nizhnevartovsk-1 section), code 83361; Tanginskiy (Tobolsk--Surgut section), code 83351. Silinskiy siding is 709 km from the Voynovka transit point and 10 km to the Surgut Station. It is 666 km from the Tanginskiy siding to the Voynovka transit point, 33 km to Surgut Station, and 444 km to Tobolsk. [Text] [Moscow GUDOK in Russian 30 May 85 p 2] 6904

BELORUSSIAN RR PASSENGER STOPS--New passenger stops on the Belorussian system have been given the following names: Piganovichi (Luninets--Zhabinka section), code 14233; Vorotishche (Baranovichi--Tsentrалnyye--Minsk-passazhirskiy section), code 14773; Mezínovka (Baranovichi--Tsentrалnyye--Minsk-passazhirskiy section, Kolosovo--Negoreloye openline), code 14791. [Text] [Moscow GUDOK in Russian 30 May 85 p 2] 6904

MOLDAVIAN RR JUNCTION--The Sofiya Station and Zerneshty siding of the Moldavian system are being opened for receiving and distributing freight in carload and small consignments loaded as entire cars, only on spur tracks and noncommon-use areas. The Zerneshty siding has been given the code 41670. [Text] [Moscow GUDOK in Russian 30 May 85 p 2] 6904

INSTITUTE RENAMED--The Institute for Advanced Training of Rail Transport Managers has been renamed the All-Union Institute for Advanced Training of Rail Transport Managers and Specialists (abbreviated VIPK MPS). [Text] [Moscow GUDOK in Russian 30 May 85 p 2] 6904

HIGH-SPEED MOSCOW--BRESTRUN--Minsk--The first high-speed test run of a passenger train was conducted on the Moscow--Brest route. It was conducted with the ChS7 electric locomotive from Moscow to Vyazma where electric traction is on direct current, and with the ChS4 in the section to and from Brest. The speed of the test route reached 160 km/hr in a number of sections, but the average speed between Orsha and Brest was below 100: that is how the timetable was drawn up. In addition, there were several stops en route because of a fast freight which passed through ahead. Nevertheless, on this test section of track the time saved off the timetable was 28 minutes in one direction and 24 minutes in the reverse direction. [By GUDOK correspondent D. Sverkunov] [Text] [Moscow GUDOK in Russian 5 Jun 85 p 2] 6904

GORKIY RR STATION RENAMED--Izhevsk-1 Station of the Gorkiy system was renamed Ustinov Station and Izhevsk-2 Station was renamed Pozim Station. [Text] [Moscow GUDOK in Russian 6 Jun 85 p 2] 6904

NORTHERN RR STATION RENAMED--Skoryninskaya Station of the Northern system was renamed Kaminskiy Station. [Text] [Moscow GUDOK in Russian 6 Jun 85 p 2] 6904



NEW GORKIY RR STATION--Golovino Station of the Gorkiy system has been opened for receiving and distributing freight in carload and small consignments loaded as entire cars, only on spur tracks and in noncommon-use areas, i.e., according to §3 of Tariff Manual No 4. [Text] [Moscow GUDOK in Russian 6 Jun 85 p 2] 6904

DONETSK RR STATION CLOSED--Verolyubovka Station of the Donetsk system is being closed for receiving and distributing carload consignments of freight permitted to be stored on open station platforms. [Text] [Moscow GUDOK in Russian 6 Jun 85 p 2] 6904

BELORUSSIAN RR STATIONS CLOSED--Demekhi Station of the Belorussian system is being closed for receiving and distributing freight in carload and small consignments loaded as entire cars, only on spur tracks and in noncommon-use areas. Mikhanovich Station of the same system is being closed for receiving and distributing carload consignments of freight in common-use areas. [Text] [Moscow GUDOK in Russian 6 Jun 85 p 2] 6904

NEW BAM RR STATION--The new Daban Station (code 99300) is being opened and included in through traffic with MPS [Ministry of Railway] railroads under temporary operating conditions on the Kunderma--Severobaykalsk line being newly constructed on the Baikal-Amur Railroad, for receiving and distributing freight in carload and small consignments loaded as entire cars, only on spur tracks and in noncommon-use areas, i.e., according to §3 of Tariff Manual No 4 of the Ministry of Railways. It is 32 km from Daban Station to the adjoining Kunderma Station. [Text] [Moscow GUDOK in Russian 6 Jun 85 p 2] 6904

ADMINISTRATIVE 'TELECONFERENCING' ABUSES--Despite a ministry instruction dated 9 December 1982 governing the procedure for conducting selector conferences and critiques, their number and duration essentially are not decreasing. The inclusion in conferences of persons not directly working on the matters covered is especially inadmissible. The Ministry of Railways has ordered a reduction in the number and duration of selector conferences and the inclusion in them of a limited number of persons directly engaged in the matters of concern in order to further regulate the conduct of selector conferences and to free the time of the heads of railroads, divisions and transport enterprises for specific resolution of problems of improving the transportation process. Railroad chiefs must establish the procedure and rules for conducting railroad selector conferences and critiques. It should be a wider practice to disconnect administrations, railroad divisions and stations (without awaiting the end of the conference) as matters in question are resolved in order to reduce time losses and improve utilization of communications channels. [Text] [Moscow GUDOK in Russian 6 Jun 85 p 2] 6904

TOSNO CAR REPAIRYARD OPEN--A car repairyard has been opened in the city of Tosno, Leningrad Oblast, as part of a complex with a car preparation point. It was built by collectives of Sevzaptranstroy [exact expansion unknown] and of the road construction and installation trust of the October Railroad jointly with Finnish specialists of the HAKA cooperative. There will be 500 boxcars repaired here in a day's time--bodies, bogies, wheel pairs, axle-boxes and bearings, springs, brake riggings, and automatic couplers will come off the

repair line like new. It is also planned to renovate 10,000 wheel pairs coming from other depots. [Text] [Moscow PRAVDA in Russian 17 Jun 85 p 1] 6904

GORKIY RR STATION UPGRADED--The Gar passenger stop of the Gorkiy System is being transferred to the station category and is being opened for accepting and distributing freight in carloads and small consignments loaded as entire cars, only on spur tracks and in noncommon-use areas, i.e., according to §3 of Tariff Manual No 4. The Gar Station has been given code 29690. It is 295 km from Gar Station to the transit point of Pozdino and 225 km to the transit point of Pibanshur. [Text] [Moscow GUDOK in Russian 27 Jun 85 p 2] 6904

NEW ODESSA RR STATION--The new station located on the Zolotonosha-I--Lyaplava section of the Odessa System has been named Peschanoye-Cherkasskoye. It has been opened for operation under §3 of Tariff Manual No 4. The station was given code 43580. It is 91 km from the Peschanoye-Cherkasskoye Station to the transit point of Grebenka and 89 km to the transit point imeni Taras Shevchenko. [Text] [Moscow GUDOK in Russian 27 Jun 85 p 2] 6904

GORKIY RR PASSENGER STOP--The passenger stop on the Yudino--Derbyshki section of the Gorkiy System has been named Levchenko (code 27073). It is 9 km from the Levchenko passenger stop to the Yudino Station and 11 km to the Derbyshki Station. [Text] [Moscow GUDOK in Russian 27 Jun 85 p 2] 6904

BAM AWARDED 'LENIN KOMSOMOL'--Tynda--The Railroad imeni Leninist Komsomol is what the Baikal-Amur Mainline is being called from now on. The CPSU Central Committee and USSR Council of Ministers decree conferring this name on it takes note of the great contribution of the country's young people to building the BAM. A ceremonial meeting of representatives of the mainline's builders and operators held in Tynda was dedicated to the gala event. Participants in the festivities adopted a letter addressed to the CPSU Central Committee, the USSR Council of Ministers and the Komsomol Central Committee expressing profound filial gratitude for the high evaluation of labor by the Soviet youth, a readiness to complete the preparation of the entire mainline for turnover for constant operation and to develop its planned capacities ahead of schedule, and a readiness to celebrate the upcoming 27th party congress with new achievements in economic development of the zone of Siberia and the Far East. [By TASS correspondent] [Text] [Moscow GUDOK in Russian 4 Jul 85 p 1] 6904

MOINTY--SARYSHAGAN LINE ELECTRIFIED--Chu (Dzhambul Oblast), 7 Jul--The local railroad office received the first electrified section of Mointy--Saryshagan 125 km long for operation. The electric mainline was laid through the waterless desert terrain, without stopping freight or passenger movement on the intensive section of the railroad. Residences were built together with production buildings. Electrification will increase the section's throughput by half, release 20 diesel engines for work on other routes and allow an increase in the weight of freight trains. The work of electrifying the system continues. In the next two years electric locomotives will traverse the entire desert section of the system and will reach the major junction of Chu. [By PRAVDA stringer A. Chegayev] [Text] [Moscow PRAVDA in Russian 8 Jul 85 p 1] 6904

EAST SIBERIAN RR STATIONS UPGRADED--Sidings Nos 14, 17 and 19 and the siding at the 562d km in the Tayshet--Lena-Vostochnaya section of the East Siberian system have been transferred to the category of stations. Siding No 14 was named Keshevo Station, Siding No 17 was named Ognevka Station, Siding No 19 was named Balaga Station and the siding at the 562d km was named Sibirishnaya Station. [Text] [Moscow GUDOK in Russian 12 Jul 85 p 2] 6904

GORKIY RR STATIONS CLOSED--The Chur and Oblastnaya stations of the Gorkiy system are being closed for accepting and distributing carload consignments of freight authorized for storage on open station platforms, and for accepting and distributing small consignments of freight. The Golovino Station of this same system is being closed for accepting and distributing small consignments. [Text] [Moscow GUDOK in Russian 12 Jul 85 p 2] 6904

NORTH CAUCASUS RR STATION RENAMED--Enem Station of the North Caucasus system has been renamed Enem-1 Station. [Text] [Moscow GUDOK in Russian 12 Jul 85 p 2] 6904

GEORGIAN RR LINE CONSTRUCTION--Tsalka (Georgian SSR), 17 Jul, TASS--The construction of the Marabda--Akhalkalaki Mainline is not yet completed, but its construction already has provided a powerful impetus to development of the economy of Georgia's southern mountainous areas. Today train work traffic opened up on a 90-km section of the route, and construction materials were delivered for the first time to the rayon center of Tsalka by train. [Text] [Moscow GUDOK in Russian 18 Jul 85 p 1] 6904

BARNAUL LRT LINE OPERATIONAL--Altay--The first five-kilometer section of a high-speed tramway in Barnaul became operational. It links large residential tracts with the plant zone. The line is now being broken in. Regular traffic on it will begin in August. [By SOVETSKAYA ROSSIYA stringer Larisa Parshukova] [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 19 Jul 85 p 6] 6904

CSO: 1829/248

# MARITIME AND RIVER FLEETS

## BREAKDOWN OF USSR MARITIME MERCHANT FLEETS AS OF 1 AUGUST 1985

Moscow MORSKOY FLOT in Russian No 11, Nov 85 p 8

[Text] The USSR Registry reports the status of the USSR Maritime Fleet, with breakdown of the data by ministries and departments as of 1 August 1985 (including self-propelled ships with gross register tonnage of 100 reg. tons or more):

TYPES OF SHIPS	Ministry of the Maritime Fleet			Ministry of the Fishing Industry			Others			In All		
	Количество судов	Гросс-регистра-льный тоннаж, рег. т	Дедвейт, т	Количество судов	Гросс-регистра-льный тоннаж, рег. т	Дедвейт, т	Количество судов	Гросс-регистра-льный тоннаж, рег. т	Дедвейт, т	Количество судов	Гросс-регистра-льный тоннаж, рег. т	Дедвейт, т
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
<u>Passenger and Passenger-Cargo</u>	206	670 035	190 254	8	1 756	437	66	25 718	4 453	280	697 509	195 144
Including: Ferries	52	253 807	74 325	—	—	—	—	—	—	52	253 807	74 325
<u>Dry Cargo Ships</u>	1 477	9 173 089	12 318 277	512	1 590 237	1 574 515	276	500 028	601 553	2 265	11 263 354	14 494 345
Including: Timber Carriers	366	1 433 932	2 003 886	1	4 499	6 605	2	9 628	13 560	369	1 448 059	2 024 051
Container Ships	49	506 745	509 382	—	—	—	—	—	—	49	506 745	509 382
RO-RO ships	58	413 636	521 626	—	—	—	—	—	—	58	413 636	521 626
<u>Tankers</u>	302	4 184 352	6 393 117	100	237 193	299 736	7	20 998	84 778	409	4 442 543	6 717 631
Including: Oil Tankers	275	3 962 774	6 149 066	79	200 517	255 830	5	17 615	21 458	359	4 180 906	6 426 354
Gas Tankers	11	186 625	201 519	—	—	—	—	—	—	11	186 625	201 519
Chemical Ships	—	—	—	—	—	—	—	—	—	—	—	—
<u>Combination Carriers</u>	11	688 003	1 194 432	—	—	—	31	83 615	88 576	42	771 618	1 283 008
<u>Fishing Ships</u>	—	—	—	2 619	3 494 338	1 934 226	7	3 474	1 627	2 626	3 497 812	1 935 853
<u>Special Purpose Ships</u>	55	202 331	134 739	208	1 502 471	1 189 175	180	248 439	109 169	443	1 953 241	1 433 083
<u>Technical Ships</u>	204	194 470	153 718	30	18 209	9 040	198	261 338	150 319	432	474 017	313 077
<u>Auxiliary Service Ships</u>	526	470 800	340 002	345	145 271	110 339	215	153 006	96 556	1 086	769 077	546 897
Including: Tugboats	285	92 419	35 132	201	82 791	38 815	107	18 896	8 469	593	219 634	89 285
Icebreakers	37	235 988	105 404	—	—	—	—	—	—	37	235 988	105 404
<u>TOTAL</u>	2 781	15 583 080	20 724 539	3 822	6 989 475	5 117 468	980	1 296 616	1 077 031	7 583	23 869 171	26 919 038

KEY: 1. Number of ships 2. Gross register tons 3. Deadweight tons

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MARITIME AND RIVER FLEETS

CHIEF ON RSFSR WATERWAY MAINTENANCE, IMPROVEMENT

Moscow RECHNOY TRANSPORT in Russian No 6, Jun 85 pp 4-6

[Article by V. Filkov, collegium member, Ministry of the River Fleet, chief of the Main Administration of Waterways: "Waterway Management: Conclusions and Perspectives"]

[Text] A highly important element of waterway management is the locking system, the basis for extra-long waterways and interbasin connections, the reliability of which depends on devoted constant attention. The strenuous transportation plan of the current five-year plan and the prediction for the 12th Five-Year Plan require more active work for reducing losses of carrying capacity of the transportation fleet associated with time expenditures on waiting for locking and movement in the intervals between locks. An analysis shows that already with the attained volumes of shipping the mean daily occupation of a number of locks with the locking-through of ships during the heaviest months approaches the limit.

The table gives data on the actual occupation of locks in locking-through ships in time in the heaviest period (in %).

A decree of the Central Committee CPSU and the USSR Council of Ministers entitled "Measures for the Development of River Transport in 1981-1985," in addition to other highly important objectives, calls for the implementation of construction of a second unit of the Sheksna locks and the development of the technical specifications for construction of the second unit of Volga-Baltic locks and the third unit of Volga locks, beginning with Gorodets and ending at Volgograd. The program for construction of the additional locking units requires enormous capital investments and its implementation requires an extremely long time. In reality, in the next few years only the second Sheksna locking unit will be put into operation. Accordingly, in solving the problems of the current and 12th Five-Year Plans it is necessary to make effective use of available locking structures.

In this connection it is entirely natural that the Main Administration of Shipping and Fleet Operation and the Main Administration of Waterways have initiated a more careful analysis of the actual expenditures of the transport fleet in passing through locking facilities and a more precise determination of the applicable norms, a search for reserves for acceleration of the passage of ships through locks and their use, a search for ways to reduce accidents in the waters in locks and near locks, with the organizations of

the Ministry of the River Fleet being drawn into this work. In March 1982 the Main Administration of Waterways, together with the Central Shipping Scientific-Technical Association, held a scientific-technical conference on the theme "Increase in the Carrying Capacity of Hydraulic Structures of Internal Waterways." For the first time this multisided problem was examined jointly with representatives of the headquarters of the ministry, scientists, shipping controllers, workers on navigable canals and at locks and at basin shipping safety inspectorates. Therefore, in the adopted recommendations there was a quite thorough and deep analysis of the existing situation and ways and means for attaining the formulated goal were outlined.

In October 1984 the scientific and technical council of the Ministry of the River Fleet examined the results of scientific research work of the ship-locking laboratory of the Moscow Water Transport Engineering Institute carried out during recent years; it also defined the key tasks involved in improving the organization and technology of ship locking and methodological and norm-setting manuals. Nevertheless, it must be noted that the use of available reserves is by no means simple. In order to achieve this, not only the workers at hydraulic structures, but also the functional, operational and technical shipping services and the headquarters of the ministry must take additional measures.

What specific steps are the first to be taken?

First, it is necessary to increase the material interest of the controllers at ports (in sectors) organizing the movement of the fleet on the approaches to locks, to direct it to an acceleration of the passage of ships through locks, regardless of what shipping line owns the ships arriving for locking. At the present time the priority in locking is influenced by the local interests of controllers because their bonus is dependent on implementation of the shipping plan by "their" port and shipping line. Evidence of this is the complaints from contiguous shipping lines and the "Volgotanker" shipping line. At a number of locking facilities, including those with a very heavy flow of shipping, controllers in general do not exhibit the necessary activity, limiting themselves to keeping track of the ships locked through and the time spent in locking ships through.

Second, it is necessary to increase the technical outfitting of the work places of controllers because the speeding up of locking operations, active influence on the regimes of fleet movement and timely information for navigators on the time of locking and the transport situation are dependent to a considerable degree on what means of observation, communication and data display are at the disposal of the controller. In order for a correct solution to be adopted it is necessary to have reliable information on the distribution of the fleet, busyness and condition of the locks.

Third, it is necessary to increase the time norms for movement through the locks and change the schedule of movement of passenger ships, having a right to priority locking. As a result of the increase in the number of large-displacement and high-speed passenger ships, for example, on the Volga, at the height of the tourist season up to 50% of the total time each day is spent on

the locking of the passenger fleet alone with incomplete use of the area of the locking chambers. The controllers of the cargo fleet and workers at locking facilities long ago spoke out on this subject and evidently it must be made possible to fill the locks to the maximum degree possible during heavy navigation periods. The curve of movement of the passenger fleet must therefore be more flexible and have a time reserve.

Fourth, there must be a systematic increase in professional mastery and discipline of navigational personnel in the transport fleet. All other conditions being equal, the time for ships to pass through locks is dependent primarily on the mastery of the ship's watch officer and the sailors performing mooring on floating rings. Ship crews perform particularly inefficiently and clumsily during the first months of the navigation season, that is, during the period of refreshing or acquisition of skills. For example, under identical meteorological conditions and with identical conditions for the loading of ships, with the average time of presence in the Sheksna locks being 7 minutes, some steamers of the "Volgo-Don" type spend more than 15 minutes on this operation. It appears desirable that more extensive use be made of the influence of methodological aids, instructional films and special trainers which in the prenavigation period would make it possible to acquire practical skills in locking. In the case of ships rarely passing through locks it is desirable that a pilot be put aboard, as is the practice in difficult reaches of the channel and in seaports.

And there is still one other extremely important factor governing the possibility of more efficient use of existing locks. Locks, in the arsenal of the main production facilities of river transport, are the most long-lived structures, not subject to rebuilding. Accordingly, in order to make more effective use of the useful area of lock chambers, in developing the variety of standard ships and in their working designs it is necessary to take into account the dimensions of the ships (especially their width), as well as their "compatibility" with the main types in the existing fleet. Unfortunately, in the variety of transport, roadstead and passenger ships planned for construction in the 12th Five-Year Plan and in the more distant future there is no reflection of this requirement.

A new locking facility on the Don River, the Konstantinovskiy locks, was put into operation in 1983 and beginning on 1 January of the current year was accepted as part of the Ministry of the River Fleet system. For the first time as part of such a hydraulic complex, in addition to the main lock there is an auxiliary lock of lesser dimensions for the locking-through of the high-speed fleet. As a result, the locking system ensures a guaranteed depth (4 m) in the Don from the Nikolayev to the Kochetovo locks virtually regardless of what the water release from the Tsimlyansk Reservoir may be. Two years of experience in operation of the new locks have demonstrated their sufficiently high reliability and the possibility of uninterrupted passage of ships through the locks. The second locking facility made possible a considerable reduction in time expenditures of the cargo fleet in waiting for passage through locks in comparison with similar facilities on the Don.



Гидроузлы и системы 1)		1981 г. 2) месяц	1982 г. 2) месяц	1983 г. 2) месяц	1984 г. 2) месяц
3)	Городецкий	76 V	76,3 VII	74,7 VII	76,8 VIII
4)	Чебоксарский	—	—	89,3 V	93,1 VII
5)	Куйбышевский	70,6 VII	69,4 VII	70,9 VII	70,9 VIII
6)	Балаковский	71,4 VII	69,8 VIII	73 VII	71,4 X
7)	Волгоградские № 30	91,3 VIII	88,5 VIII	96,5 VII	95,1 VIII
	№ 31	95,9 VII—IX	99,3 VIII	98,7 IX	99,5 XIII—X
8)	Пермский	86,2 V	79,2 VI	86 VI	82,5 VII
9)	Чайковский	65,8 VI	69,6 VII	66,8 VI	68,8 VII
10)	Нижнекамский	87,2 VI	83,3 VII	88,5 VII	91 VII
11)	Шлюзы Волго-Балта № 2	62,6 VII	70,6 VII	69,3 VII	69,6 VI
12)	Шекснинский	91,7 VI	93 VII	90,7 VII	91,5 VI
13)	Канал имени Москвы				
14)	шлюзы № 5	82,9 VI	89,8 V	83,9 IX	82,3 VII
	шлюзы № 10	74,6 VI	95,6 VIII	95,1 VIII	97,5 VIII
15)	Рыбинский	83,3 VIII	82 VIII	89,9 VII	92,7 VIII
16)	Волго-Донской канал (№ 2)	72 VIII	65,8 IX	73,5 VIII	64,8 VII
17)	Беломорско-Балтийский канал (№ 1)	69,5 VII	74 VIII	74 VIII—IX	91,1 VIII
18)	Цимлянский	86,5 VI	84 VI—VII	88 V	82,1 VI

KEY:

- |                      |                                   |
|----------------------|-----------------------------------|
| 1. Locks and systems | 10. Nizhnekamsk                   |
| 2. Month             | 11. Volga-Baltic locks No 2       |
| 3. Gorodets          | 12. Sheksna                       |
| 4. Chebosary         | 13. Canal imeni Moskva            |
| 5. Kuybyshev         | 14. Locks No 5, No 10             |
| 6. Balakovo          | 15. Rybinsk                       |
| 7. Volgograd         | 16. Volga-Don Canal No 2          |
| 8. Perm              | 17. White Sea-Baltic Canal (No 1) |
| 9. Chaykovskiy       | 18. Tsimlyansk                    |

In 1984 the facilities of the Ministry of the River Fleet were supplemented by the Krasnoyarsk ship elevator on the Yenisey. This structure has no equal in work practice on construction of locking structures both with respect to the head to be overcome and with respect to the load-lifting capacity for the ships to be handled. For various reasons the projected rate of movement of the ship-lifting chamber was not attained, and this exerted an influence on the handling capacity of the ship elevator. There is now an agreement with the Ministry of the Machine Tool and Tool Building Industry and other organizations on the delivery of hydraulic motors and supporting-motive units of an improved design. Design work is being carried out on an automatic system for control of chamber movement. Operational personnel must perform a great amount of work on the installation, adjustment and fitting of all assemblies and systems to the design parameters. The operation of the ship elevator and the active work of specialists of the Yenisey Basin Shipping Administration



give basis for hoping that the reliability of this unique structure will be increased and in the coming five-year plan there will be assurance of the passage of all the economic cargo intended for river transport at the point of the Krasnoyarsk Hydroelectric Power Station.

A continuous and accelerated passage of ships through locks and locking facilities is possible only under the condition that they are in a normal engineering state. The personnel of hydraulic structure districts and basin waterway administrations, solving everyday operational problems, are stubbornly working on the realization of five-year measures for improving technical condition and increasing the reliability of the hydraulic structures approved by the ministry manual for 1981-1985. The development of such program documents is based on materials from intra- and interdepartmental inspections carried out in accordance with an approved schedule. The experience which has been acquired demonstrates the effectiveness of the introduced system for the control of the technical state of locking structures. Accordingly, one of the main problems is a thorough analysis and systematization of available data from the observations and investigations made and the working out of programs for the coming five-year plan.

The second most important direction in the work of waterway workers is dredging, maintenance and increase in the guaranteed depths primarily in ice-free rivers due to dredging work. During the four years of the five-year plan the guaranteed depths in a total distance of 7,000 km increased by 10-50 cm. Also accomplished has been such capital construction work as digging a channel with a depth of 250 cm in the rocky Soyuznovskiye shoals on the Amur with a length of more than 4 km. The task of mastering transport on small rivers in the regions of petroleum and gas production has been completed: assurance of navigation on the Agan, Vakh, Bolshoy Salym and Kazym Rivers with a total extent of 1,800 km.

During the 11th Five-Year Plan a situation has become completely clear: on most of the free rivers, especially in their upper courses, where the cargo-generating ports are usually situated, the depths have reached the maxima possible considering the hydraulic conditions of flow. Further dredging, without giving an increase in depths, will lead only to the settling down of levels with all the consequences following from this for port, water intake and other structures on rivers, which is inadmissible. During the period which has elapsed observational and research materials were examined and decisions were made concerning the cessation of major dredging on the upper and lower Oka, Belaya, Irtysh (from Tobolsk to Omsk) and Nadym. On the basis of special studies made by Lengiprorechtrans the directors of the Ministry of the River Fleet in late 1984 decided that the limiting depth which can be ensured by dredging on the Lena from Kirensk to the port of Osetrovo should be 180 cm and a further increase in depths can really be achieved only as a result of construction of a low-head transportation hydraulic complex in the immediate neighborhood of the port. The corresponding technical-economic basis for the construction of such a hydraulic complex was worked out jointly by Giprorechtrans, Lengiprorechtrans and Sibgiprorechtrans, approved by the scientific and technical council of the ministry and sent to the State Expert Commission of USSR Gosplan for consideration.

Two long-term programs have now been formulated which provide for an increase in depths on ice-free rivers: 140 to 160 cm on the Pechora from Pechora to Nar'yan-Mara (780 km) and from 130 to 150 cm on the Ob from its confluence to Barnaul (250 km). Provision is made for carrying out, simultaneously with dredging, of major straightening work and financing has been allocated by the River Shipping Experimental Administration, Main Administration of Ports and Port Facilities, Main Administration of Waterways and corresponding shipping lines, taking into account the exceptionally high effectiveness of an increase in depths in the mentioned reaches. The waterway administrations have been supplied the necessary apparatus and even floating cranes, which are in short supply.

Particular attention must be given to the problem of an increase in depths across the bars of Siberian rivers on which the volumes of dredging are increasing annually. Experience has shown that the first two highly productive suction dredges of the "M-SP" class (ice) for the most part have passed acceptance tests and in the 1985 navigation season will be delivered to a work site in the Gulf of Ob. Two more such suction dredges, intended for operation in the Lena Basin, have been begun in the shipyards of the AO "Vyartsilya" (Finland). When they are put into operation the possibility will appear for solving the problem of establishing stable depths across the bars in Siberian rivers: Yamal, Nadym, Yana and Indigirka.

It should be noted that during the 11th Five-Year Plan it was possible to strengthen the nucleus of the dredging fleet. With a constant number (350 units) the productivity of the entire dredging fleet of the Main Administration of Waterways increased from 165,000 to 176,000 m<sup>3</sup>/hour. This became possible due to the continuation of construction of a series of suction dredges with a productivity of 2,500 m<sup>3</sup>/hour (CSSR) and superpowerful multibucket dredges with a productivity of 550 and 600 m<sup>3</sup>/hour at the Ulyanov (Lenin) and Leninskaya Kuznitsa plants. As a result, in 1984 such complex work was successfully completed as the formation of a water expanse in Yamburg port in the Gulf of Ob and the digging of approaches to the Katrovozhskoye deposit of minerals and construction materials on the Sob River.

With each passing year there is an increase in the requirements of the water and fishing inspectorates on the implementation of dredging work on rivers. The inspectorates of the Main Administration for the Protection and Reproduction of Fish Reserves and Regulation of Fishing are imposing substantial claims even on day-to-day dredging work, no provision being made for this in current legislation. However, in examining disputed matters the arbitration panels invariably support the agencies of the Ministry of Fishing. It can be seen that the time has come for a serious study of the problem of the influence of dredging on fishing, for the formulation of consistent criteria and for introduction of compensatory measures for compensating for the losses inflicted on the fishing industry directly or indirectly by the Ministry of the River Fleet in sums within limits agreed upon in advance. Definite measures in this direction have been adopted. The Scientific Research Water Transport Engineering Institute is investigating the influence of dredging on the reproduction of fish resources and the Volga Basin Administration of Waterways since 1984, with the participation of the Gidrorybproyekt, is making computations of the losses inflicted on fishing.

Finally, the third direction is navigation conditions. Particular attention was devoted to this direction during the 11th Five-Year Plan. In 1982 the matter was specially examined by the ministry collegium.

In the implementation of the mentioned collegium resolution navigational beacons have continued to be connected to on-shore electrical systems. During the last three years 22 channel beacon complexes have been installed, which has substantially increased the reliability of operation of waterway safety, especially on the main routes. Due to the measures which have been adopted, there has been an improvement in the supply of waterways with electric batteries. And although the number of batteries allocated by the territorial administrations of USSR Gossnab is still below the required number, the actual deliveries in 1984 were 25% greater than in 1981.

During this same time the construction of a waterway fleet suitable for operating under local conditions has been organized in the Omsk workshops on the Irtysh, at the Konstaninovka workshops on the Don and at the Kirensk workshops on the Lena. In 1985 the first steamer suited for operation under local conditions, constructed in the workshops of the Kolpashevo Technical Sector of the Ob Basin Shipping Administration, will be launched. However, the number of ships under construction is inadequate and there has been no turning point yet in the supply of local brigades with a modern fleet, because merely for the compensation of natural losses it is necessary that 40 steamers be constructed each year.

Great difficulties are being overcome by waterway workers in the fabrication of metal buoys, the need for which is increasing from year to year. However, due to increased requirements imposed by controlling agencies on the construction of buoys they are not produced by virtually any industrial shipping enterprise (exceptions are the Lena Association and the Sukhona Shipping Line).

The principal direction pursued by the Main Administration of Waterways in ensuring reliable navigation safeguards on waterways is the installation of a chain of stationary on-shore beacons. Only they, in combination with convenient deep navigable channels, are capable of ensuring a really safe waterway. The problem of reservoirs is a special one. For several years now channel beacons have been in construction in individual sectors most convenient for this purpose.

Now the problem arises of supplying an entire reservoir with a continuous chain of beacons which will enable navigators to be oriented day and night, winter and summer, in storms and fog. Such a plan has been drawn up by Giprorechtrans for the Rybinsk Reservoir. This has been coordinated with the Moscow Shipping Line and the basin navigation inspectorate and has been approved at the Main Administration of Waterways. It is a matter of honor for the Administration of the Canal imeni Moskva and the Podvodrechstroy to realize this plan in concrete and metal in the shortest possible time, despite all the existing difficulties.

Here we have touched upon only a few of the key problems in waterway transport. There are many difficulties and unsolved problems in the supply and

outfitting of enterprises of the Main Administration of Waterways with equipment and transportation. Unfortunately, there have been cases of violation of discipline and manifestations of irresponsibility.

Entering into the final year of the five-year plan, waterway workers are applying all their efforts, knowledge and experience in providing the fleet with a reliable, safe deep-water waterway.

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## MARITIME AND RIVER FLEETS

### WORK OF NOVOSIBIRSK WATER TRANSPORT ENGINEERING INSTITUTE

Moscow RECHNOY TRANSPORT in Russian No 6, Jun 85 pp 6-8

[Article by N. Yaichnikov, institute prorektor, Novosibirsk Water Transport Engineering Institute: "To the River Fleet from the NIIVT Scientists"]

[Text] The Novosibirsk Water Transport Engineering Institute is charged with the obligations of a scientific research organization servicing eastern river shipping lines, basin administrations of waterways and enterprises of the Ministry of the River Fleet. The scientific research activity of the body of scientists conforms first and foremost to solution of this problem. At the present time there are 10 economic agreement laboratories and five scientific research groups in the various departments which perform such work.

The economic agreement scientific work is directed primarily to solution of specific production problems. The directions most timely for the branch and corresponding to the background and scientific potential of the institute are selected. Unfortunately, such an approach to formation of the scientific program cannot be realized with the existing manner of planning and financing of scientific research work. The fact of the matter is that the Novosibirsk Water Transport Engineering Institute is assigned the role of an organization operating under the scientific-methodological direction of the key institutes of the Ministry of the River Fleet. These determine the research program, frequently without taking our capabilities and proposals into account.

Despite this fact, during recent years a number of independent projects have been carried out, whose broad introduction is exerting a substantial influence on the results of work of river fleet enterprises.

Three scientific research problems have been dealt with at the Novosibirsk Water Transport Engineering Institute: mastery of transport on small rivers (jointly with the Central Scientific Research Institute of the Economics of Water Transport); development and improvement of automatic couplings for strings of barges having a large cargo capacity; introduction of flexible strings of barges.

For several years now institute scientists have been studying navigation conditions on small rivers in the northern part of Tyumen Oblast, the Yenisey and Lena Basins, and are carrying out engineering research work in their unused reaches.

Studies have been made of about 3,000 kilometers of new waterways and initial engineering research work has been carried out on 15 rivers, for each of which schematic maps have been prepared, the width and depth of the channel have been determined, velocity regimes and possible traffic capacity have been clarified and recommendations on the mastery of such rivers have been formulated. The transport of cargo has now been successfully initiated on some of these on the basis of such research. In 1984 alone they carried about 4 million tons and a savings of 1.24 million rubles was realized. A special-objective comprehensive scientific and technical program has now been drawn up for the development of the transport of freight and passengers along small rivers up to 1990-2000. The leading measures provided for under this program include the carrying out of a complex of dredging, straightening and bottom cleaning work on waterways, the construction of shore structures and port-wharf facilities. A considerable fraction of the expenditures on these measures must be assumed by the interested ministries and departments because in the majority of cases small rivers must be regarded as accesses to industrial enterprises. The work on the mastery of transport on small rivers is headed by V. P. Zachesov, candidate of technical sciences.

Over a number of years the institute has carried out theoretical and experimental research directed to the development of automatic coupling devices, in the course of which, with the cooperation of the Gorkiy Central Design Bureau and the Novosibirsk Affiliate of the Central Technical Design Bureau, a number of modifications of automatic couplers were developed which have come into wide use in the river fleet. The results of these investigations are at the level of inventions.

The introduction of the automatic couplers has made it possible to increase the productivity of labor of waterway personnel by 21%, to lower the cost of shipping by 10-12% and to increase the carrying capacity of the fleet by 6.5%.

A creative team under the direction of Professor N. F. Storozhev, recipient of the USSR State Prize, in cooperation with the design organizations of the branch, for the 12th Five-Year Plan developed a comprehensive program for development and improvement of automatic couplers and the mechanization of time-consuming deck and mooring work on ships with the use of microprocessors and robot technology.

On the Moscow, Bel'sk and Sukhona shipping lines successful use is being made of pushed strings of barges equipped with flexible coupling. This is the result of introduction of a number of developments of a team of scientific workers headed by Professor V. G. Pavlenko, Meritorious Worker in Science and Technology of the RSFSR, carried out with the participation of the designers of the Novosibirsk Affiliate of the Central Technical Design Bureau of the Ministry of the River Fleet. During the 1984 navigation season flexible strings of barges, operating primarily on shallow-water routes, carried cargo in a volume greater than 800 million tons·km with a saving of 184,000 rubles.

A comprehensive experimental base was established in the Department of Ship Theory and Design. Its basis is an experimental basin equipped with special devices for carrying out thorough hydrodynamic tests of models of different

types of ships under real navigation conditions, including ice conditions. It can be used in modeling the movement of ships when they meet or overtake one another. There is also a circulation basin with a rotary apparatus intended for an investigation of the hydrodynamic characteristics of ships and barges during curvilinear movement.

A team of specialists in the field of hydromechanics also devotes much attention to investigations of ships under natural conditions. A floating laboratory was set up on the steamer "Iskatel" for this purpose. The specialists in the field of hydromechanics have a high scientific potential: during recent years they have received 12 Author's Certificates for inventions and 10 positive responses. All this makes it possible, both successfully and at a high scientific level, to carry out research in the field of ship theory, to optimize the technical-economic indices of the designed ships and strings of barges, to increase the safety of navigation and provide practical assistance to shipping lines. Most research is carried out in close collaboration with the scientific research and planning-design organizations of the Ministry of the River Fleet and the Ministry of the Shipbuilding Industry, as well as the institutes of the Siberian Department, USSR Academy of Sciences.

It should be noted that the possibilities of the institute in the field of ship hydromechanics are by no means fully used. In particular, there is no stable theoretical and practical research program and therefore important, special problems are solved inadequately.

On the basis of the theoretical research of institute specialists (director V. N. Andreyev), carried out in collaboration with workers of the Leningrad Institute of Water Transportation and the Irtysh shipping line, there is a new trainer which has no equal elsewhere and makes it possible not only to instruct navigators, but also to seek safe navigation methods. The trainer is now being used at the Omsk SSRZ for the retraining of navigation personnel.

Theoretical and experimental investigations on the effective use of motor fuel in ship diesels have been made under the direction of Professor O. N. Lebedev. As a result a method has been developed for preparing water-fuel emulsions, a changeover to which will make possible a 5% decrease in fuel expenditure, which will ensure an annual saving of about 20 rubles per 1 kW. This method is being developed in final form under operational conditions and is being introduced on steamers of the West Siberian shipping line.

In close cooperation with the Novosibirsk Regional Experimental Base of the fleet and the Ob Basin Shipping Administration successful work has been done on developing a method for increasing the longevity of pistons of shipboard diesels by means of their armoring (work director A. P. Gribkovskiy, candidate of technical sciences). The use of an armoring insert in the piston ring zone increases the service time of the pistons by a factor of 5 - 10 and reduces the expenditure of fuel and lubricants.

Institute specialists have developed a technology and gear which can be used in diesel repair shops. This development has been adopted for standard introduction.



The workers of the Shipbuilding and Ship Repair Department, directed by its head L. K. Arabyan, in cooperation with the Thermal Physics Institute, Siberian Department, USSR Academy of Sciences, are working successfully on strengthened and renovated screws and guide fittings by the plasma spraying method. In a number of cases the testing of the developed technology gave positive results: the strengthened screws operate without evidence of cavitation damage. Plasma spraying of screw blades and filling of the working zone of the guide fittings with cavitation-resistant powdered wire, carried out on the OT-2032 steamer-pusher, ensured an annual saving of 12,400 rubles. Theoretical investigations and experimental checking indicated that a plasma coating with use of the alloy PG-KhN80SR3 has excellent operational properties; in comparison with steel 25L the resistance to cavitation increases by a factor of 4; the resistance to hydroabrasion increases by a factor of 8 and in comparison with standard parts, the longevity increases from 2-4 fold. The technology of renovation and strengthening of screws and fittings by the plasma spraying method is being introduced at the Novosibirsk Regional Experimental Base of the fleet. Studies are being made of the use of this technology in the renovation and strengthening of the parts of bucket chains of dredges in Tomsk port.

Institute specialists are devoting serious attention to the mechanization and automation of waterway work; they are rendering assistance to the Ob Basin Shipping Administration. Under the direction of V. G. Vlasov, candidate of technical sciences, studies are being made for the purpose of developing automatic systems for control of the technological process of dredging on the basis of microprocessor equipment. The introduction of the system on the dredge "Tom" during the 1984 navigation season made it possible to realize a saving of 66,500 rubles.

A team of specialists headed by V. I. Mukhin, candidate of technical sciences, has developed apparatus for the automation of engineering field work, finding use at the Ob, Lena and other Basin Shipping Administrations and making it possible to reduce by half the number of personnel in engineering field parties, to realize an annual saving of 18,000 rubles annually per party.

The fabrication of radio phase apparatus of the "Izyskatel" type is underway in the Volgograd Region Hydrostructures Laboratory of the Main Administration of Waterways. Each year it will produce 5-6 outfits annually. The supplying of all engineering field parties of the branch with such apparatus will make it possible to save more than 4 million rubles annually and reduce the number of workers engaged in engineering field work by not less than 900 persons. In this connection the Main Administration of Waterways must find some possibility for increasing the production of such apparatus to at least 15 outfits annually.

The staff of the Department of Waterways, headed by Professor V. V. Degtyarev, is constantly working on the problem of a radical improvement in navigation conditions on Siberian rivers.

During recent years a major research program has been carried out in the Lena Basin, making it possible for the waterway workers on the Lena to optimize the structure of waterway work.



With the active participation of the instructors in the Department of Waterways, the specialists of the Novosibirsk Division of the SibrybNIIproyekt, the Central Botanical Garden, Siberian Department, USSR Academy of Sciences, and other scientific institutes research has been done on the prevention of all the harmful effects of dredging and straightening work on the water medium, a result of which is the Instructions on Performance of Waterway Work With Allowance for Preservation of the Natural Water Medium, which should go into effect in 1985.

A diagnosis and prediction of the remaining useful operating life of ship internal combustion engines was made using an analysis of changes in the parameters of lubricating oil. Together with specialists of the West Siberian shipping line, the scientists of the Novosibirsk Water Transport Engineering Institute are participating in improving a system for the technical operation of the fleet on this basis. Gradually, with the introduction of diagnostic instruments, the methods for monitoring the technical state of the machines are changing. A comprehensive system for the collection and centralized processing of data with the use of an electronic computer and radio communication channels is being developed.

In addition to the enumerated studies, a number of other kinds of work have been done which have been introduced into production. These include the working out of a plan for optimum use of the fleet in the West Siberian shipping line; proposals for reducing the cost of shipment of cargo and increasing the effectiveness of capital investments; intensification of loading-unloading work; recommendations on the mastery of the transport of rubble and gravel along the Katun, Biya, Ob and other rivers have been formulated.

During the four years of the 11th Five-Year Plan the scientists of the Novosibirsk Water Transport Engineering Institute filed 46 applications for patents and 28 Author's Certificates were granted for them. A total of 127 proposals of the institute were put into practical use with a saving, confirmed by the enterprises, of about 10 million rubles. In 1984 the Novosibirsk Water Transport Engineering Institute, for developing the "Rapid-2" instrument for the heating of workrooms on ships, was awarded the diploma of the USSR All-Union Exhibition of Achievements in the National Economy. During four years of the five-year plan exhibition medals were awarded to 9 scientific workers.

Work on 35 agreements on creative cooperation with enterprises, planning-design and scientific research organizations is now being carried out.

The vigorous scientific activity is exerting a highly favorable influence on the academic process. The introduction of lectures into the courses, the use of the results of research in course and diploma projects, is arousing among students a great interest in technology and in scientific research, is drawing them into active research work. As a result, recently not less than 95% of the students are participating in scientific work. The students of the Novosibirsk Water Transport Engineering Institute are actively participating in all-union and all-RSFSR competitions and olimpiads. The best student studies have been repeatedly awarded diplomas of the RSFSR Ministry of Higher and Intermediate Specialized Education, have been given certificates and prizes. During the course of the five-year plan, among the 77

student studies presented a total of 27 were deemed worthy of diplomas and certificates. Institute representatives have successfully contended in the olimpiads "The Student and Scientific-Technical Progress," usually taking prizes. Each year more than 300 students are attracted to work in the field of economic agreements and state budget research.

The personnel understand that life insistently requires a substantial increase in the scientific contribution of the institute to the development of river transport and an accelerated introduction of the results of scientific research in production. The efforts of scientists of the Novosibirsk Water Transport Engineering Institute during the Twelfth Five-Year Plan will be directed to the scientific solution of problems related to ensuring efficient operation of the river fleet in regions of exploitation of the natural resources of Siberia and the Far East; reduction of manual and heavy physical labor in loading and unloading work and ship repair; construction of a new, economical fleet for Siberia, and above all, ships for small rivers; assurance of the necessary navigation conditions on these rivers; economy of fuel and energy resources; development of automatic systems for the control of technological processes on the basis of microprocessor equipment.

Work on these problems requires the involvement of the entire teaching staff of the institute on these problems, the participation of students and graduate students, renovation and broadening of the laboratory base of the institute and construction of an instruction and laboratory building.

The scientists of the Novosibirsk Water Transport Engineering Institute are striving to welcome the 27th Congress CPSU with active work for acceleration of scientific and technical progress.

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## PORTS AND TRANSSHIPMENT CENTERS

### MORE CRITICISM OF OSETROVO PORT PERFORMANCE

Moscow SOVETSKAYA ROSSIYA in Russian 22 Aug 85 pp 1-2

[Article by SOVETSKAYA ROSSIYA special correspondents V. Avdevich and A. Orlov under the rubric "Report from Operation 'Northern Delivery'": "Osetrovo Dead-Ends"]

[Text] In summer a flow of freight is directed to the country's northeastern territories. Fuel, equipment, raw materials for industrial enterprises, and food and commodities for the population--a reserve for the many months of winter when supply will be extremely hampered--are being carried. Vital activities of an enormous area the year around depend on how successfully the northern delivery is organized, but transport workers of Yakutiya and of Magadan Oblast are encountering serious problems today.

These problems generally are not new and steps have been taken repeatedly to resolve them. In particular, beginning in 1979 it was ordered that all freight suitable for containers be transported in containers to areas of the Far North with transshipment at the Osetrovo port. What has changed since then?

The crane lightly grasped the package of flour, but then the binding loosened, the bags tilted precariously and one burst...

"Down, down!" said the workers, waving their arms. The load was lowered to its previous place.

"I'm sorry for the bread," says Yu. Popov, a slinger of the Osetrovo River Port, despondently. "Now the bags will have to be stacked on a pallet by hand, tied down and loaded on the vessel. We're losing time."

"Where did the load come from?" we asked Yuriy Nikolayevich.

"Here's the label: 'Shipper: Yegorshino Station of the Sverdlov Railroad, Grain Base No 46'."

The port has a special shop where wire slings are made by which packages are formed. It is a forced measure. It is easier to transload commodities arriving by rail from the cars into vessel holds when they arrive in consolidated lots. The shipping enterprises are supposed to do this work, but they avoid it and the river transport workers are forced to assume the additional burden.

The Osetrovo Port is the river gate to the country's northeastern part. Over 80 percent of freight for the Yakut ASSR and the northern rayons of Irkutsk Oblast passes through this transshipping center. During the five months that navigation lasts port workers must receive almost four million tons of freight from railroad workers and ship it by river. The factor of time thus assumes decisive importance, but each year the port does not cope with the transshipment of freight. When the brief northern navigation ends, thousands of tons of various products which are awaited by the enterprises and population of the northeastern rayons pile up in the Osetrovo dead-end. The situation is aggravated from year to year. Today more than 2,000 cars have stacked up on the approach to Osetrovo, among them tens containing vegetables, fruits and other perishable food products, but the port manages to unload only 260 cars in a 24-hour period.

Just how can the delivery of products to the destinations be accelerated? Specialists reply that the capabilities of containerizing and packaging must be used to the maximum. It has been estimated that the use of such standard containers reduces the freight processing periods by 3-4 times.

Each year no more than 70 percent of the commodities arrives in iron containers. In the first half-year, for example, containers were used to deliver 11,000 tons of freight less than was planned by USSR Gosplan, and 50,000 tons of freight less than the plan was delivered in packages. The situation now is changing for the better as a result of vigorous actions taken, and the containers have begun heading for Osetrovo, but the fact is that we cannot rely only on strong-willed solutions all the time. A system is needed. Just why hasn't it formed to this day?

"You see," replies L. Cheglakov, first deputy chief of the Ministry of Railways Main Administration for Containerized Transport and Commercial Work, "manufacturing enterprises ship their products in containers and packages without being particularly inclined. You need facts? Here they are. In five months of this year the USSR Ministry of the Fruit and Vegetable Industry coped with the USSR Gosplan quota for shipping canned foods to Osetrovo only by 25 percent and the USSR Ministry of the Food Industry coped with sugar deliveries by 11 percent. Things are no better in the other ministries."

But there is also the following fact. The Moscow Krasnyy Oktyabr Factory once requested the railroad workers to allocate 27 standard containers for transporting confectioneries and didn't receive a one. And the transport workers often respond with a refusal to other enterprises.

A. Lebed, deputy chairman of USSR Gosplan, explains the situation: "Let's begin by saying that the railroads experience a shortage of standard containers. They are not to blame: the sector's own plants have produced 150,000

containers fewer than planned over the last three years. Moreover, their repair is poorly organized. And finally and most importantly, the Ministry of Railways isn't interested in sending containers to Osetrovo."

There is no denying that. A container turns around in Yakutiya almost eight times slower than in the country's territory as a whole. There is an objective reason: transport distances are excessive and river navigation periods are brief. Concerned with their own operating indicators, railroad workers strive to hold back the containers a bit and not send them to the northeastern part of the country.

Of course containerization is not the only possibility for accelerating freight delivery to Arctic areas. The use of a supership fleet would provide a great effect if there would be guaranteed depth for the entire stretch of the Lena. We saw how the motorship "Sibirskiy" worked its propellers lengthily in an attempt to shove off from the quay. She was being "grabbed," as the river transport workers say. The Lena is shallow here: depths often decrease to 190-180 cm. Another half-meter is necessary for large-tonnage vessels, and so it turns out that a fourth of the Lena fleet is disengaged from work on the most important sector.

Dredging doesn't produce the desired effect. River transport workers have long posed the question of building a hydrosystem here capable of raising the water level to 2.5-3 m throughout the entire navigation period. It was ten years ago that the USSR Ministry of Power and Electrification was supposed to draw up a scheme for using the upper reaches of the Lena, but nothing has changed to this day. Construction of a hydrosystem would pay for itself in a few years. The fact is that when vessels are grounded now, aircraft must be used to deliver priority freight. Billions of rubles go down the drain. A dam of solid gold already could have been built with these funds.

There has been occasion to hear the opinion from specialists of USSR Gosplan and of the ministries that construction of the Berkakit--Yakutsk Railroad will solve all the problems. But first of all, the railroad will not be laid soon and secondly, if all freight were shifted to it an enormous new port would have to be built in Yakutsk. Then why spend money if there already is a large-capacity developing port of Osetrovo which lacks only water?

But let's imagine that the guaranteed depths have appeared. Will this solve the problem of accelerated delivery of freight to the Arctic regions? No, the fact is that conditions for rapid unloading of ships have not yet been established at the destinations and at departmental berths.

"We are in constant discord with the heads of departmental berths," complains N. Vybornyy, captain of the motorship "Sibirskiy." "They live only for their own interests and are in no hurry to unload the arriving vessels. Do you know what we nicknamed the Ministry of Nonferrous Metallurgy port in Lensk? 'The Forge of Downtimes'."

In our view, "the port in Lensk" is high-flown talk. There is nothing there with the exception of a quay--no warehouses, no logistical crane management,

no berth for receiving special freight and containers... At the same time it is difficult to overestimate the importance of the Lensk industrial port for enterprises of the Ministry of Nonferrous Metallurgy located in the northern part of Yakutiya. The slightest delay in supply knocks production off the pace and introduces difficulties into people's lives. Back in 1982 L. Lobov, the acting chief of the Ministry of Nonferrous Metallurgy Soyuzzoloto Association, officially declared that "construction of the Lensk port will begin in 1983 and 100 running meters of berths will be turned over by the end of the five-year plan." The words remained on paper.

"So what?" asks V. Rudakov, deputy minister of nonferrous metallurgy, in a puzzled manner. "The river transport workers didn't suffer a bit. The port experiences overloads only at the beginning and end of the navigation period and stands idle the rest of the time."

Is this so? Last year ten vessels with 15,000 tons of cement and construction materials returned from Lensk to Peleduy to spend the winter. Fellow transport workers didn't have time to unload them before ice began forming. Were it not for such losses the river transport workers would have transported over 120,000 tons of freight additionally from Osetrovo to Lensk.

Things are no better with construction of berths for the RSFSR State Committee for the Supply of Petroleum Products, the USSR Ministry of the Coal Industry and the USSR Ministry of the Construction Materials Industry. Last year Lensk captain G. Sukhanov, a deputy to the USSR Supreme Soviet, sent a query to the Ministry of Nonferrous Metallurgy and the USSR State Committee for the Supply of Petroleum Products about renovation of the Lensk port and other departmental berths, but he hasn't received any answers to this day. We would like to know how the RSFSR State Committee for the Supply of Petroleum Products and the Ministry of Nonferrous Metallurgy will assure an increased delivery of fuel in the current year.

We have highlighted only three problems from the experience of the Lensk transshipping center. As a matter of fact, there are more. Just what conditions have to be established in order for the flow of container freight for the Osetrovo port to fill up, for the Lena to become deep, for the shortage of working hands to disappear and for tankers and motorships not to stand idle at departmental berths? In the opinion of specialists, the incentive for railroad workers to supply containers for freight being shipped to Yakutiya should have been increased. The skilled use of planning factors also would have helped the matter. For example, it would be advisable to approve the number of cars with containers along with the average daily norm for unloading cars in the quarterly and monthly quotas for the Osetrovo port. It is time to return to the issue of building a low-pressure transport hydrosystem in the section of the Lena River from Ust-Kut to Kirensk. The sufficient level of depth would allow use of large-tonnage vessels in the basin. And further, we believe that the lack of diligence of those ministry heads who were to blame for the disruption in building departmental berths in Yakutiya cannot be left without a strict appraisal. We are sure that a solution to the problems posed will help untie the Osetrovo knots and will provide an impetus for the accelerated development of the country's Northeast.

## PORTS AND TRANSSHIPMENT CENTERS

### BRIEFS

VANINO PORT RAIL LINES--Vanino, Khabarovsk Kray, (TASS)--The last section of rails was laid in the railroad sector of the second phase of the ferry crossing over the Tatar Strait. The railroad between Vanino Station, where freight from the Baikal-Amur Mainline will arrive, and the port was laid along the rocky slopes of the surrounding hills a month ahead of scheduled. [Text] [Moscow VODNYY TRANSPORT in Russian 10 Aug 85 p 1] 6904

HYDRAULIC LOADER LAUNCHED--Volgograd--Another hydraulic loader intended for transloading bulk materials from one means of transport to another was launched from the shipbuilding ways of the Krasnoarmeysk Ship Repairyard. The loader's capacity is 1,000 tons per hour. Previously launched hydraulic loaders already are operating at berths of the country's major industrial centers--in Yaroslavl, Arkhangelsk and other cities. [By I. Mikhaylov] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 18 Aug 85 p 2] 6904

YUZHNY PORT RAIL FACILITIES--Development of the port of Yuzhny, largest on the Black Sea, also predetermines the need for a new railroad station for speeding up the transshipment of bulk freight. Recently such a station, Rudnaya, appeared and already has begun operation. It is designed for accelerated delivery of freight to vessels. Its capacity will constantly grow. It is planned to build a railcar inspection and preparation point by the end of the five-year plan. [By VODNYY TRANSPORT correspondent A. Bondareva] [Text] [Moscow VODNYY TRANSPORT in Russian 31 Aug 85 p 2] 6904

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# INTERSECTOR NETWORK DEVELOPMENT

## 1917-1984 TRANSPORT SECTOR STATISTICS COMPARED

Moscow VESTNIK STATISTIKI in Russian No 10, Oct 85 pp 52-53

[Text]

Length of Transportation Routes  
(in thousands of kilometers; at end of year)

	1917	1940	1960	1970	1980	1984
Operational length of Railways Ministry railroads . . . . .	70,3	106,1	125,8	135,2	141,8	144,1
Navigable inland waterways . . . . .	42,5	108,9	137,9	144,5	142,0	136,7
Main oil and petroleum products pipelines	1,1	4,1	17,3	37,4	69,7	78,3
Hard-surfaced public roads . . . . .	25,0	143,4	258,4	489,0	723,5	793,2
Air routes (without overlapping segments)	—	146	375	773	996	1 020

Freight and Passenger Turnover for All Types of Public Transport

	1917	1940	1960	1970	1980	1984
Total freight turnover (including motor transport), in billion ton-kilometers	85,8	494	1 898	3 961	6 781	7 682
Railroad portion of above . . . . .	63,0	421	1 504	2 495	3 440	3 639
Total passenger turnover, in billion passenger-kilometers	23,0	109	255	561	901	990
Railroad portion of above . . . . .	22,0	100	176	274	342	364

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